

DIARIA BRITANNICA:
OR, THE *K. with*
BRITISH DIARY:
AN
ALMANACK.

FOR THE
Year of OUR LORD 1795.

BEING THE THIRD AFTER
BISSEXTILE, OR LEAP YEAR.

CONTAINING,
VARIETY of useful and entertaining MATTER in
ARTS and SCIENCES:

calculated for the Improvement of the CURIOUS.

ALSO AN
EPHEMERIS.

herein are contained the Heliocentric and Geocentric Places
of the Planets, accurately calculated.

By JOHN COTES and PATRICK HALL.

The Eighth Almanack published of this Kind.



Sweet Muses nine shew forth your learned lore, 95
To BRITISH YOUTH, all scientific store
Of profound knowledge, teaching them to know,
Wisdom's true fount, where arts and science flow;
For learned works a monument will raise,
Be doubly crown'd with laurels and with bays.

BIRMINGHAM,

Printed and Sold by THOMAS PEARSON,

AT THE WHOLESALE ALMANACK WAREHOUSE, AND BY CHAMPANTE
AND WHITROW, JEWRY-STREET, LONDON. (Price One Shilling.)

Chronological Notes for the Year 1795.

Julian Period	6508	Dominical Letter	D	Easter Day	April 8
World's Creation	5751	Epact	—	Whit Sunday	May 19
Roman Indiction	13	Numb. of Direction	15	Trinity Sund.	May 10
Solar Cycle	—	Septuagesima S.	Feb. 1	Advent Sund.	Nov. 11
Golden Number	10	Shrove Sund.	Feb. 15	Millennium Years	1000

Astronomical Characters used in this Diary.

Aries	♈	Virgo	♍	Aquarius	♒	Mars	♂	N. Node
Taurus	♉	Libra	♎	Pisces	♓	Venus	♀	S. Node
Gemini	♊	Scorpio	♏	G. Sidus	♄	Mercury	☿	Earth
Cancer	♋	Sagittary	♐	Saturn	♄	Sun	☉	Part. For.
Leo	♌	Capricorn	♐	Jupiter	♃	Moon	☾	

♄ Conjunction, when Planets are in the same sign, degree, and minute.

* Sextile, when 2 signs distant

△ Trine, when 4 signs distant

□ Quartile, when 3 signs distant

8 Opposition, when 6 signs distant

Of the Four Quarters of the Year.

Spring Qu. begins March 20, 2h. 53a. | Autumn Q. be. Sept. 22, 2h. 32m.
Summer Qu. beg. June 21, 0h. 45a. | Winter Qu. be. Dec. 21, 7h. 15m.

ECLIPSES for the Year 1795.

FOUR times this year will the two Luminaries be eclipsed, two of Sun, and two of the Moon, according to the following order:

I. January 20, the Sun is eclipsed invisible, ♄ at 12h. 9m. in π 1°. 10'. D's lat. 40m. 57f. north, the Sun is centrally eclipsed in the merid. of 126m. in long. 173°. 31m. east, lat. 25°. 17m. north.

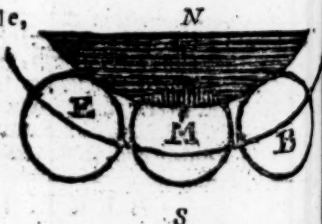
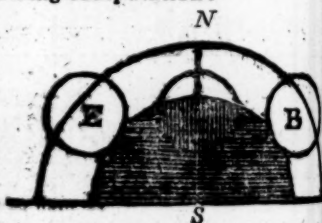
II. February 3, according to the following computation:

	b. m.		b. m. s.
Beginning	10 59	from	10 50 11
Middle	12 25	M. S.	12 25 52
End	13 51	Tables	14 1 3
Duration	2 52		3 10 42
Digits	7 27	On son limb	8 52 54

III. July 16, Sun eclipsed invisible, ♄ at 7h. 31m. in the morning, centrally eclipsed on the meridian at 7h. 41m. in longitude 64°. 16m. east, lat. 10°. 15m. south.

IV. July 31, Moon eclipsed part visible,

	b. m.		b. m. s.
Beginning	6 46		6 49 14
Middle	7 42	M.S. tables	7 46 1
Moon rises			
End	8 38		8 42 48
Duration	1 52		1 53 24
Digits	2 52	On nor. limb	2 44 31



An Ex. to find the Planets places Jan. 1.

Look into the calendar, and table of minutes for Jan. 1, and you will find
♄ in π 3de. 4m. ♀ in δ 23de. 9m. ♃ in ν 1ade. 26m. ♄ in π 20m. ♀ in ν 12 de. 19m. and ♄ in δ 22de. 17m. &c.

A TABLE of the MOON's southing for the Year 1795.

Jan.	Feb.	Mar.	Apr.	May	Jun.	July	Aug.	Sept.	Oct.	Nov.	Dec.
h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.
8 47	10 14	9 3	10 23	10 38	11 2	11 43	0 10	1 35	2 13	4 4	35
9 42	11 7	9 55	11 7	11 16	morn	morn	1 32	27 3	10 4	59 5	27
10 39	morn	10 45	11 50	morn	0 14	0 35	1 55	3 20	4 7	56 0	15
11 30	0 0	11 32	morn	0 1	1 3	1 27	2 46	4 14	5 6	40 7	0
morn	0 49	morn	0 32	0 45	1 53	2 19	3 36	5 8	5 7	38 7	43
0 33	1 33	0 18	1 14	1 31	2 48	3 10	4 27	5 7	28 8	24 8	24
1 27	2 20	1 2	1 57	2 18	3 36	4 0	5 18	7 37	56 9	8 9	6
2 17	3 3	1 44	2 42	3 8	4 27	5 06	11 8	0 8	47 9	51 9	48
3 43	4 45	2 26	3 29	4 59	5 18	6 40	7 6	56 9	36 10	33 10	31
4 39	4 28	3 9	4 17	5 06	6 30	8 3	9 51	10 22	11 16	11 15	15
5 32	5 9	3 53	5 7	6 42	7 58	9 16	10 50	11 30	0 42	0 51	
6 14	5 53	4 38	5 58	6 33	7 49	8 16	9 50	11 30	11 49	0 42	
7 5	6 40	5 25	6 51	7 25	8 41	9 13	10 56	0 11	0 32	1 27	40
8 37	7 29	6 14	7 44	8 1	9 36	10 12	11 50	1 1	1 52	14 2	20
9 20	8 20	7 6	8 37	9 9	10 33	11 12	0 41	1 44	1 58	3 3	18
10 5	9 14	8 0	9 31	10 2	11 32	0 10	1 29	2 27	2 43	3 53	7
11 53	10 9	8 55	10 25	10 58	0 33	1 6	2 14	3 10	3 29	4 43	55
12 44	11 5	9 50	11 20	11 56	1 35	1 59	2 57	3 54	4 17	5 33	43
1 37	0 1	10 45	0 16	0 55	2 36	2 48	3 40	4 40	5 7	6 22	31
2 31	1 0	11 40	1 12	1 50	3 25	3 34	4 23	5 25	6 7	7 17	19
3 26	1 49	0 35	2 12	2 56	4 15	4 18	5 7	6 16	7 49	8 08	10
4 21	2 42	1 30	3 11	3 54	5 1	5 0	5 52	7 7	8 40	9 50	4
5 15	3 36	2 26	4 10	4 48	5 46	5 42	6 38	8 0	9 31	10 42	1
6 13	4 24	3 22	5 7	5 39	6 28	6 25	7 26	8 52	10 23	11 36	1
7 58	5 23	4 19	6 2	6 27	7 9	7 9	8 1	9 46	10 13	11 54	morn
8 49	6 17	5 16	6 54	7 12	7 51	7 54	9 10	10 39	11 8	morn	0 4
9 41	7 14	6 12	7 43	7 54	8 33	8 42	10 3	11 32	morn	0 35	1 6
10 33	8 10	7 8	8 20	8 36	9 18	9 32	10 57	morn	0 3	1 37	2 6
11 27	8 0	6 9	13 9	17 10	4 10	4 24	11 5	0 25	1 3	2 30	3 2
12 22	8 51	9 56	10 50	10 52	11 17	morn	1 18	1 50	3 39	3 54	
1 18	0 30		10 42		morn	0 42		2 20		4 42	

TABLE of the Seven Stars southing, or Times when they pass the Meridian.

A.	A.	A.	A.	A.	M.	M.	M.	M.	M.	M.	A.
8 47	6 31	4 42	2 5	0 50	10 56	8 52	6 48	4 52	3 51	8 11	1
7 8	1 6	7 4	2 2	0 36	10 31	8 27	6 25	4 31	2 43	7 10	34
6 17	5 15	4 33	5 2	6 0	12 10	6 8	3 6	2 4	0 2	10 20	8
5 9	2 5	2 03	3 1	44 11	48 9	41 7	39 5	40 3	47 1	58 19	42
4 17	0 4	5 7	15 1	21 11	24 0	17 7	15 5	18 3	26 1	35 11	26 9 16

Use of the Tables. To find the Time of High Water.

EXAM. On Jan. 1st Moon souths at	8 47 a.
Add for N. and F. Moon for London	2 30
Time of High Water at London	11 17 a.
Add for next Low Water	5 49
Time of Low Water at London	5 6 m.

Ex. 1.) On Jan. 1, Seven Stars souths at	8 43 a.
Semidiurnal arc. subtract and add	8 17
Seven Stars rises Jan. 1st at	0 26 a.
Seven Stars sets next morning Jan. 2;	5 0 m.

Ex. 2.) Seven Stars souths Jan. 1 at	8 43 a.
Sirius souths after the Seven Stars	2 1
Sirius south Jan. 1st afternoon	11 44 a.
Semidiurnal arc subtract and add	4 37
Sirius rises Jan. 1st afternoon	7 7 a.
Sirius sets Jan. 2d morning	4 21 m.

Na. of Stars	h. a. 7	l. d. a.
Aldebaran	0 49	7 29
Capella	1 26	—
Betelgeuse	2 8	6 41
Alphard	5 42	5 24
Regulus	6 21	7 11
Upp. point.	7 15	—
Virg. spike	9 30	5 12
Arcturus	10 26	7 55
Antarus	12 41	3 34
Algethi	13 38	7 21
Lyra	14 52	—
Atair	16 4	6 46
Fomalhaut	19 8	2 52
Pole star	21 12	—
Almack	22 16	—
Algol	23 15	—
Algenib	23 37	—

A TABLE of MINUTES, or the Residue of the Planets' Places.

January.											February.											March.											April.										
M	D	h	m	s	h	m	s	h	m	s	M	D	h	m	s	h	m	s	h	m	s	M	D	h	m	s	h	m	s	M	D	h	m	s	h	m	s						
1	4	9	20	20	19	17	4	47	36	1	4	47	36	1	4	47	36	1	4	47	36	1	4	47	36	1	4	47	36	1	4	47	36	1	4	47	36						
3	2	5	54	52	7	6	59	49	3	42	5	59	49	3	42	5	59	49	3	42	5	59	49	3	42	5	59	49	3	42	5	59	49	3	42	5	59	49					
5	59	1	22	25	55	59	54	52	31	14	50	44	42	13	26	19	42	41	36	4	41	57	31	46	4	41	57	31	46	4	41	57	31	46	4	41	57	31					
7	56	57	50	58	44	55	49	55	58	45	49	19	37	22	49	47	33	44	33	17	58	23	42	30	17	58	23	42	30	17	58	23	42	30	17	58	23	42					
9	53	54	18	31	40	52	44	58	25	17	54	57	32	30	12	16	28	13	30	30	14	49	54	30	11	49	54	30	11	49	54	30	11	49	54	30	11	49	54				
11	49	51	46	3	44	53	39	2	51	48	6	36	27	40	34	45	23	5	17	43	10	15	7	48	13	43	10	15	7	48	13	43	10	15	7	48	13	43					
13	46	48	14	36	55	55	34	7	17	8	24	17	2	50	56	13	22	26	25	57	45	40	21	20	13	46	48	14	36	55	55	34	7	17	8	24	17	2					
15	42	46	42	9	14	59	29	12	43	49	47	59	17	0	18	41	22	18	22	11	59	6	35	6	15	42	46	42	9	14	59	29	12	43	49	47	59	17					
17	38	45	10	41	45	6	24	17	8	20	14	40	13	10	39	9	24	48	20	25	13	31	50	5	13	38	45	10	41	45	6	24	17	8	20	14	40	13					
19	34	43	37	13	27	15	19	22	33	50	43	19	8	21	0	37	26	5	18	39	26	6	5	13	3	34	43	37	13	27	15	19	22	33	50	43	19						
21	30	43	5	46	18	26	13	28	58	20	16	53	4	32	20	5	30	18	16	53	38	21	21	32	4	30	43	5	46	18	26	13	28	58	20	16	53	4					
23	26	43	33	18	18	40	8	35	23	50	53	17	0	43	40	32	34	36	15	7	50	46	37	4	23	26	43	33	18	18	40	8	35	23	50	53	17	0					
25	21	43	0	50	26	56	3	42	48	20	34	29	56	55	0	59	40	3	14	22	2	10	53	30	2	21	43	0	50	26	56	3	42	48	20	34	29	56	55				
27	17	44	28	22	42	15	57	49	13	50	17	24	52	7	20	26	46	49	13	37	13	35	0	23	17	44	28	22	42	15	57	49	13	50	17	24	52	7					
29	12	45	55	54	9	36																																					

May.											June.											July.											August.										
M	D	h	m	s	h	m	s	h	m	s	M	D	h	m	s	h	m	s	h	m	s	h	m	s	h	m	s	h	m	s	h	m	s	h	m	s	h	m	s				
1	11	7	33	33	44	21	28	6	24	41	52	43	30	51	26	43	35	6	9	4	38	55	4	51	16	14	23	12	31	8	10	4	38	55	4	51	16	14	23	12	31	8	
3	10	22	41	47	2	31	31	21	21	3	14	53	35	5	13	2	59	37	16	14	23	12	31	8	10	22	41	47	2	31	31	21	21	3	14	53	35	5	13	2	59	37	16
5	10	37	49	10	20	51	34	37	17	24	36	53	41	19	1	21	23	49	24	24	7	30	57	48	30	34	53	47	24	54	19	15	25	49	37	32	1	23	31	46	14	39	27
7	10	53	56	33	40	16	37	53	13	45	58	46	47	52	47	59	47	48	30	34	53	47	24	54	30	34	53	47	24	54	19	15	25	49	37	32	1	23	31	46	14	39	27
9	10	8	2	56	59	49	41	8	7	5	20	30	53	46	33	58	11	31	37	44	39	4	51	29	30	34	53	47	24	54	19	15	25	49	37	32	1	23	31	46	14	39	27
11	11	23	8	19	18	31	45	23	1	26	42	4	59	59	19	16	35	54	45	53	25	21	18	30	30	34	53	47	24	54	19	15	25	49	37	32	1	23	31	46	14	39	27
13	12	39	14	42	37	20	49	39	55	46	5	27	5	12	4	35	1	56	52	2	11	38	45	1	15	12	39	14	42	37	20	49	39	55	46	5	27	5	12	4	35	1	
15	13	54	19	4	57	16	53	54	47	6	28	41	11	25	49	53	26	41	59	11	58	55	12	57	17	14	10	23	27	17	22	57	9	39	26	51	46	17	37	34	12	52	7
17	14	10	23	27	17	22	57	9	39	26	51	46	17	37	34	12	52	7	7	19	45	12	39	19	19	15	25	49	37	32	1	23	31	46	14	39	27	17	22	57	9	39	26
19	15	25	25	49	37	32	1	23	31	46	14	39	23	50	19	30	17	15	14	27	35	29	7	4	21	16	41	28	11	57	48	5	38	21	6	37	22	31	2	4	48	43	7
21	16	41	28	11	57	48	5	38	21	6	37	22	31	2	4	48	43	7	22	35	21	46	34	9	23	18	56	29	33	17	10	9	53	11	25	0	55	38	14	48	6	8	47
23	18	56	29	33	17	10	9	53	11	25	0	55	38	14	48	6	8	47	29	42	9	2	2	31	25	20	12	39	54	38	13	14	7	1	44	24	16	45	25	32	24	33	21
25	20	12	39	54	38	13	14	7	1	44	24	16	45	25	32	24	33	21	36	48	58	18	30	5	27	22	27	29	16	59	55	19	22	50	4	47	25	52	36	17	42	59	54
27	22	27	29	16	59	55	19	22	50	4	47	25	52	36	17	42	59	54	44	54	48	35	58	40	22	24	43	28	38	10	18	25	36	38	24	11	22	59	47	2	0	25	30
29	24	43	28	38	10	18	25	36	38	24	11	22	59	47	2	0	25	30	52	0	38	52	26	41	23	18	56	29	33	17	10	9	53	11	25	0	55	38	14	48	6	8	47

September.							October.							November.							December.																													
M	D	h	m	s	h	m	D	h	m	s	h	m	s	M	D	h	m	s	h	m	s	M	D	h	m	s	h	m	s	M	D	h	m	s																
1	4	9	24	46	9	28	52	39	42	40	27	44	20	30	59	59	16	56	5	15	33	23	55	50	3	11	14	16	2	38	20	59	38	46	56	57	43	24	23	14	13	46	31	6	5	56	36	26	53	
3	11	14	16	2	38	20	59	38	46	56	57	43	24	23	14	13	46	31	6	5	56	36	26	53	5	18	19	9	18	6	15	6	36	50	11	27	40	28	15	29	27	17	34	7	55	18	49	56	10	
5	18	19	9	18	6	15	6	36	50	11	27	40	28	15	29	27	17	34	7	55	18	49	56	10	7	26	23	3	33	35	2	12	34	54	26	57	33	32	7	44	41	48	1	8	48	41	2	27	36	
7	26	23	3	33	35	2	12	34	54	26	57	33	32	7	44	41	48	1	8	48	41	2	27	36	9	33	27	57	49	4	46	18	31	0	46	22	36	59	0	55	18	48	9	35	4	15	57	1		
9	33	27	57	49	4	46	18	31	0	46	22	36	59	0	55	18	48	9	35	4	15	57	1	11	41	30	52	5	33	29	24	28	7	51	57	7	40	50	17	9	49	59	9	25	27	27	28	5		
11	41	30	52	5	33	29	24	28	7	51	57	7	40	50	17	9	49	59	9	25	27	27	28	5	12	48	33	47	31	2	6	30	24	15	11	28	49	43	41	34	23	20	35	9	16	51	39	58	4	
13	48	33	47	31	2	6	30	24	15	11	28	49	43	41	34	23	20	35	9	16	51	39	58	4	15	55	35	43	37	31	39	36	20	23	26	58	27	46	32	52	37	50	52	9	6	15	51	29	3	
15	55	35	43	37	31	39	42	16	31	41	28	58	49	23	16	51	21	20	9	57	46	3	0	2	17	3	37	40	52	0	8	58	11	41	56	59	25	52	13	29	4	52	3	8	48	5	15	30	2	
17	3	37	40	52	0	8	42	16	31	41	28	58	49	23	16	51	21	20	9	57	46	3	0	2	17	3	10	39	38	8	30	33	48	11	41	56	59	25	52	13	29	4	52	3	8	48	5	15	30	2
19	10	39	38	8	30	33	48	11	41	56	59	25	52	13	29	4	52	3	8	48	5	15	30	2	21	18	40	37	24	59	54	53	6	51	10	29	44	55	4	49	18	22	26	7	39	31	27	0	2	
21	18	40	37	24	59	54	53	6	51	10	29	44	55	4	49	18	22	26	7	39	31	27	0	2	23	25	41	37	58	28	11	58	0	1	25	39	54	57	54	9	31	53	38	7	30	57	38	41	2	
23	32	41	37	59	58	24	3	52	13	39	29	55	59	44	29	44	23	33	5	22	53	49	1	2	25	35	41	37	33	25	2	3	52	48	25	54	0	43	1	35	50	57	54	8	4	14	50	0	31	2
25	39	41	38	10	27	34	4	48	25	54	0	43	1	35	50	57	54	8	4	14	50	0	31	2	27	46	40	40	25	57	41	13	41	38	8	30	15	3	25	11	10	24	19	2	6	18	11	2	3	

JANUARY hath XXXI Days.

U	h	b f.	u f.	g f.	♀ n	♂ n
1	047	2 12	0 71	2 4	2 0	25
13	047	2 9	8 0	52 5	1 f. 0	
25	047	2 5	9 0	42 629	1 54	

Full Moon 5 day, 10 morn.
 Last Quart. 13 day, 5 mor.
 New Moon 20 day, at mid.
 First Quart. 27 day, 9 nig.

Full Moon 5 day, 10 morn.

Laft Quart. 13 day, 5 mor.

New Moon 20 day, at mid.

First Quart. 27 day, 9 nig.

Heliocentric Longitude.

D	H	K	L	S	T	V	X	Z	C	E	M	N		
1	0	38	27	45	15	3	1	0	10	44	5	15	9	55
7	0	42	28	0	15	33	4	43	20	28	23	49	9	35
13	0	47	28	13	16	4	3	25	0	13	10	2	28	15
19	0	52	28	26	16	34	10	5	9	58	27	08	57	
25	0	57	28	39	17	4	15	44	19	43	14	51	8	38

D	W	Festival Days.	Aspects & Wea.	☉	☽	♈	♉	♊	♋	♌	♍	♎	♏	☾	lat	dec	D
D	D			☉	☽	♈	♉	♊	♋	♌	♍	♎	♏	☾	fou.	north	sets.
1	T	Circumcif.	☉ ☽ ♈	11	3	23	14	29	12	22	20	8	5	7	12	52	2 55
2	F	♈ fet 8. 31 n	☉ ☽ ♈	12	3	23	14	29	11	23	4	11	28	4	42	16 26	4 13
3	S	♈ fet 8. 18 n	Cold	13	3	23	14	0	11	25	18	4	14	0	18	50	5 26
4	D	2 S. aft. Chr.	☉ ☽ ♈	14	3	23	15	1	10	26	2	44	3	4	20	22	6 35
5	M	♈ ri. 6. 53 m	8 ☽ ♈	15	2	23	15	2	9	27	16	3	1	58	20	29	D ri.
6	T	Epiphany	rain or snow,	16	2	22	15	3	9	29	0	1	1	46	19	25	5 39
7	W	☉ fo. 3. 3 m	and tur-	17	2	22	15	3	8	15	13	11	on	26	17	18	6 43
8	T	Lucian	bulent	18	2	22	16	4	8	2	26	0	1	35	14	21	7 48
9	F	♈ fet 8. 0 n		19	2	22	16	5	7	3	8	2	3	38	10	50	8 54
10	S	♈ fet 8. 19	☉ ☽ ♈	20	2	22	16	6	7	5	20	4	7	33	6	55	10 0
11	D	1 S. aft. Eph.	☉ ☽ ♈	21	2	22	16	7	6	6	2	50	4	17	2	48	11 4
12	M	♈ ri. 7. 32 m	☉ ☽ ♈	22	2	22	17	7	6	8	14	4	5	49	1	22	Morn
13	T	Hil. C. T. b.	☉ ☽ ♈	23	2	22	17	8	5	9	26	3	7	5	9	5	28
14	W	☉. T. beg.	☉ ☽ ♈	24	2	22	17	9	5	11	8	3	1	5	16	9	22
15	T	♈ fet 7. 33 n	☉ ☽ ♈	25	2	22	17	10	5	12	20	3	2	5	9	12	56
16	F	♈ fet 8. 21 n	wind,	26	2	22	17	10	4	14	2	4	43	4	49	16	0
17	S	☉ fo. 2. 18 m	☉ ☽ ♈	27	2	22	18	11	4	16	15	8	4	14	18	25	4 21
18	D	2 S. aft. Eph.	☉ ☽ ♈	28	2	22	18	12	4	17	27	5	1	3	26	20	0
19	M	♈ fo. 7. 16 n	☉ ☽ ♈	29	2	22	18	13	4	9	10	5	1	2	27	20	35
20	T	Fabian 1 ret.	☉ ☽ ♈	30	2	22	18	13	4	20	24	1	1	18	20	1	D sets
21	W	Agnes	☉ ☽ ♈	1	2	22	19	14	4	22	7	3	47	0	4	18	17
22	T	Vincent	☉ ☽ ♈	2	2	22	19	15	4	24	21	3	9	1	13	15	27
23	F	Hil. T. beg.	☉ ☽ ♈	3	2	22	19	16	4	25	5	4	2	26	11	41	7 27
24	S	♈ fet 8. 22 n	☉ ☽ ♈	4	2	22	19	17	4	27	19	5	4	30	7	14	8 44
25	D	3 S. aft. Eph.	☉ ☽ ♈	5	2	22	20	17	4	28	4	9	10	4	22	2	22
26	M	♈ fo. 6. 46 n	☉ ☽ ♈	6	2	22	20	18	4	30	18	26	4	58	2	38	11 19
27	T	☉. A. Fr. b	☉ ☽ ♈	7	2	22	20	19	4	2	2	8	40	5	16	7	28
28	W	☉ fet 1. 31 m	☉ ☽ ♈	8	2	22	20	20	4	3	16	50	5	14	11	52	0 33
29	T	♈ fet 8. 20 n	mild to	9	2	22	20	20	5	5	0	11	51	4	53	15	34
30	F	K. Ch. I. M.	the end.	10	2	22	21	21	5	7	14	47	1	16	18	21	3 4
31	S	♈ fo. 6. 26 n	* ♈ ☽	11	2	22	21	22	5	9	28	3	1	3	24	20	3 4

D	D. L beg.	Sun rise	Sun set.	D. L. ends	leng. of D.	Day inc.	Declination.											
							⊙	f.	ff	n	h	n	U	f.	♂ f.	♀ f.	♀ f.	
1	5 58	8 2	3 58	6 2	7 56	0 6	23	0	11	7	16	27	22	43	12 41	18 53	22 39	
7	5 53	7 58	4 2	6 7	8 4	0 14	22	21	11	11	16	26	22	39	10 56	17 55	23 38	
13	5 47	7 52	4 8	6 13	8 16	0 26	21	26	11	15	16	25	22	29	9 10	17 15	24 55	
19	5 40	7 44	4 16	6 20	8 32	0 42	20	17	11	19	16	25	22	19	7 20	16 56	23 36	
25	5 31	7 36	4 24	6 26	8 48	0 58	18	53	11	24	16	27	22	3	5 28	16 54	22 55	

Geocentric Latitude.

D	M	n	h	f	u	f	u	q	n	q	i
1	0	48	2	3	10	0	37	6	12	2	5
13	0	48	2	0	11	0	27	5	14	1	31
25	0	48	1	55	0	13	0	18	4	0	128

Full Moon 4 day, 1 morn.
 Last Quart. 12 day, 2 morn.
 New Moon 19 day, 1 after.
 First Quart. 26 day, 5 mor.

FEBRUARY hath XXVIII Days.

Heliocentric Longitude.

D	M	n	h	u	f	u	q	n	q	i				
1	1	3	28	55	17	40	19	57	1	7	6	8	8	16
7	1	7	29	8	18	10	23	32	10	52	27	45	7	57
13	1	12	29	22	18	41	27	5	20	37	23	15	7	38
19	1	17	29	35	19	11	0	8	35	0	20	23	7	19
25	1	21	29	48	19	41	4	6	10	21	29	24	7	0

M	W	Festival	Alf. & weath.	☉	☿	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓	D lat	D de.	D
D	D	days.																fou.	north	fets.
1	D	Sept. Sun.	Frosty,	12	2	22	21	23	6	10	12	4	2	21	20	34	5	16		
2	M	Cand. day	with	13	2	22	21	23	6	12	25	24	1	12	19	54	6	10		
3	T	Blas. 3 ret.	☉ ☿	14	1	22	22	24	6	14	8	31	0	10	13	40				
4	V	h fo. 6. 10	now or	15	1	22	22	25	7	15	21	23	1	11	15	31	5	25		
5	T	Agatha	rain.	16	1	22	22	26	7	17	4	22	2	17	12	10	6	32		
6	F	h fo. 0. 54m	Δ h	17	1	22	22	27	8	19	16	26	3	15	8	21	7	37		
7	S	♂ fets 8. 26n	□ h	18	1	22	22	27	8	21	28	39	4	3	4	16	8	43		
8	D	Cex. Sund.	Windy,	19	1	22	23	28	9	23	10	12	4	0	4	9	49			
9	M	4 return.	with	20	1	22	23	29	9	24	22	37	5	4	4	16	10	50		
10	T	h f. 5. 47 n	rain or	21	1	23	23	30	10	26	4	30	5	15	8	5	11	54		
11	W	h fo. 0. 33m	□ ☉	22	1	23	23	0	11	28	16	23	5	13	11	45				
12	T	Collop Th.	Hil. T. c	23	1	23	24	1	11	28	16	23	5	13	11	45				
13	F	♂ fets 8. 28n	(8 h) ☿	24	1	23	24	2	12	2	10	4	31	4	57	14	59	0	56	
14	S	Valentine	Snow.	25	1	23	24	3	13	4	22	55	3	46	17	38	2	7		
15	D	Quinquag.	Sh. Su.	26	1	23	24	3	13	5	5	38	2	54	19	31	3	6		
16	M	♂ fets 8. 29n	☉ D	27	1	23	24	4	14	7	18	43	1	47	20	29	4	4		
17	T	Shrove Tu.		28	1	23	25	5	15	9	2	11	0	34	19	8	5	48		
18	W	Wh. W. C. T. d. m		20	1	23	25	6	15	11	16	4	0	42	16	42				
19	T	h fo. 5. 13 n	☉ ☿	1	1	23	25	6	16	13	0	18	1	53	13	13	5	23		
20	F	h fo. 5. 23m	☉ D	1	1	23	25	7	17	15	14	43	3	7	8	52	6	21		
21	S	h fo. 11. 54n	☉ D	2	1	23	25	8	18	16	29	30	4	5	3	56	7	41		
22	D	h Su. in Lent	More mild	3	1	23	26	9	19	18	14	47	1	13	9	0				
23	M			4	1	23	26	9	19	20	28	55	5	9	6	17	10	24		
24	T	St. Mat. Pr. Ad F. b		5	1	23	26	10	20	21	38	25	5	12	10	55	11	41		
25	W	Emb. week	* h ☿	6	1	23	26	11	21	23	27	41	4	55	14	51				
26	T	♀ fets 4. 25m	to the	7	1	23	27	12	22	24	11	40	1	21	17	53	0	56		
27	F	♂ fets 3. 35n	Δ h ☿	8	0	23	27	12	23	26	25	22	3	33	19	50	2	7		
28	S		end.	9	0	23	27	13	24	27	8	25	2	34	20	36	3	11		

VENUS is a morning star till October 16, then an evening star to the year's end.
 JUPITER is a morning star from the 4th day of January till July 25, then an evening star to the end of the year.

to the end of the year.										4th day of January till July 25, then a																
D	D. L.	Sun	D. L.	eng.	Day	Declination.																				
	beg.	rise	set.	ends	of D.	inc.	☉	f.	u	n	h.	n	u	f.	♂	f.	♀	f.	♂	f.						
1	5	26	7	24	136	6	9	12	1	22	17	1	11	29	16	30	21	54	3	17	17	8	19	34		
7	5	3	7	14	146	6	9	32	1	42	15	13	34	15	34	21	41	1	23	17	26	16	15			
13	5	8	7	3	157	6	9	54	2	4	13	15	40	16	39	21	29	0	30	17	41	12	6			
19	1	57	6	52	5	8	7	3	10	16	2	26	11	10	11	45	16	44	2	15	2	22	17	50	7	3
25	1	46	6	40	5	20	7	14	10	20	2	50	8	58	11	51	16	50	21	2	4	13	17	48	2	0

8	16
7	57
7	38
7	9
D	
sets.	
5	10
6	10
D rife	
5	25
6	32
7	37
8	43
9	49
10	59
11	54
Morn	
10	56
12	7
13	6
14	4
15	0
16	48
set	
15	3
16	21
17	41
18	0
19	24
20	41
Morn	
20	56
21	7
22	11
d.	
a an	
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34	
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6	
0	

[illegible]

MAY hath XXXI Days.

[illegible]

Geocentric Latitude.

D	m	h	f.	h	f.	h	f.	h	f.	
1	0	45	1	42	0	29	0	41	1	33
13	0	45	1	41	0	32	0	46	1	45
25	0	44	1	41	0	34	0	51	1	24

Full Moon 2 day, 6 after.
 Last Quart. 10 day, 9 morn
 New Moon 16 day, 11 night
 First Quart. 24 day, 5 morn

JUNE hath XXX Days.

Heliocentric Longitude.

D	M	h	f.	h	f.	h	f.	h	f.	h	f.	h	f.	h	f.	h	f.	h	f.
1	3	36	3	21	27	52	25	32	12	39	19	25	1	3	36	3	21	27	52
7	2	40	3	34	28	23	28	19	22	11	23	12	47	1	3	36	3	21	27
13	2	45	3	48	28	54	1	14	1	43	20	33	1	3	36	3	21	27	52
19	2	50	4	1	29	25	4	8	11	10	13	30	0	3	36	3	21	27	52
25	2	54	4	15	29	56	59	20	50	3	23	0	3	36	3	21	27	52	25

M	W	Festival	Asp. &	☉	☿	♂	♀	♂	♀	☽	D lat	D de.	D	M	W				
D	D	days.	weath.	☿	♂	♀	♂	♀	☽	m	nor.	south	sets.	D	D				
1	M	Nic. 1 ret.	♂ ♂ ♀	10	29	4	7	19	5	19	27	1	4	34	15	4	3	3	3
2	T	4 ri. 11. 31 n	Show-	11	29	4	7	20	7	21	9 ♀	2	3	59	17	53	2	4	4
3	W	♀ ri. 2. 31 m	ers at	12	29	4	7	21	8	23	21	9	3	13	19	57	3	5	5
4	T	K.G. III. b.	the be-	13	29	4	7	21	9	25	3 ♀	23	2	18	21	7	9	4	4
5	F	P. Ern. A. b.	T. T. b	14	29	4	7	22	10	27	15	47	1	16	21	17	10	3	3
6	S	[Bon.	* ☿ ♀	15	29	4	7	23	11	29	28	21	0	8	20	22	11	5	5
7	D	1 S. aft. Tr.	♂ ♂ ♀	16	29	4	7	23	12	30	11	22	8	1	18	25	11	5	5
8	M	2 return	gin-	17	29	5	7	24	14	3	24	10	2	8	15	29	12	5	5
9	T		ning,	18	29	5	7	25	15	5	7	30	3	10	11	42	0	2	2
10	W		with	19	29	5	7	25	16	7	21	10	4	2	7	13	0	5	5
11	T	4 ri. 11. 19 n	thunder	20	29	5	7	26	17	9	5	10	4	42	2	16	1	1	1
12	F	♀ ri. 2. 16 m	and	21	29	5	6	27	18	10	19	30	5	5	20	55	1	1	1
13	S	♂ set 8. 51 n	hail,	22	29	5	6	27	20	12	4	8	5	10	8	3	2	2	2
14	D	2 S. aft. Tr.		23	29	5	6	28	21	14	18	59	4	53	12	46	2	3	3
15	M	3 return	♂ ♂ ♀	24	29	5	6	29	22	15	3	55	4	17	16	45	3	3	3
16	T		♂ ♂ ♂	25	29	6	6	29	23	17	18	48	3	24	19	37	4	3	3
17	W	St. Alban	[* ☿ ♂	26	29	6	6	30	24	18	3	50	2	17	21	8	5	3	3
18	T		♂ ♂ ♀	27	29	6	6	1	26	20	17	52	1	3	21	14	9	3	3
19	F	♂ set 10. on	Δ h ♀	28	29	6	6	1	27	21	1	51	on	13	19	59	10	2	2
20	S	Tr. K. W. S.	yet the	29	0	6	6	2	28	23	15	24	1	26	17	36	10	2	2
21	D	3 S. aft. Tr.	* ☉ ☿	29	0	6	6	3	29	24	28	33	2	32	14	23	11	2	2
22	M	4 return	☉ ☿ ♀	30	0	6	6	3	30	25	11	33	3	29	10	34	11	2	2
23	T			1	0	6	6	4	26	23	44	4	15	6	23	10	2	2	2
24	W	St. John B.	T. T. c	2	0	7	6	5	3	28	5	50	4	48	2	3	0	2	2
25	T	♀ rif. 2. 2 m		3	0	7	6	5	4	29	17	56	5	7	2	18	0	2	2
26	F	4 ri. 9. 49 n	month	4	0	7	5	6	5	30	29	50	5	14	6	32	0	2	2
27	S	♂ set 9. 46 n	mild	5	0	7	5	7	6	1	11	43	5	7	10	30	1	2	2
28	D	4 S. aft. Tr.	and	6	0	7	5	7	7	2	23	38	4	46	14	4	1	2	2
29	M	St. Pe. & Pa.	pleasnt	7	0	7	5	8	9	3	5	4	37	4	13	17	2	2	2
30	T	Buck h. b.	in	8	0	7	5	9	10	4	17	45	3	29	19	26	2	2	2
		Doğ days b.	general.																

D	D. L.	Sun beg.	Sun rise	Sun set.	D. L.	leng. of D.	Day inc.	Declination.	D	D. L.	Sun beg.	Sun rise	Sun set.	D. L.	leng. of D.	Day inc.	Declination.
1		351	3	0		16	18	8 28	1		351	3	0		16	18	8 28
7		346	3	14		16	28	3 38	7		346	3	14		16	28	3 38
13	all	342	3	18	Day	16	36	8 46	13	all	342	3	18	Day	16	36	8 46
19		341	3	19		16	38	8 48	19		341	3	19		16	38	8 48
25		341	3	19		16	38	8 48	25		341	3	19		16	38	8 48

Geocentric Latitude.

JULY hath XXXI Days.

Heliocentric Longitude.

JULY hath XXXI Days.																							
Heliocentric Longitude.																							
☿	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒												
10 44	1 41	0 35	0 53	1 11	0 22	1 2	59	4 28	0 25	9 50	0 25												
30 44	1 42	0 37	0 57	0 42	3 11	7 3	34	4 41	0 57	12 40	10 1												
50 44	1 42	0 39	1 10	10 4	57	13 3	84	55 1	28 15	28 19	38 24												
70						19 3	13 5	8 1	59 18	15 29	16 11												
90						25 3	18 5	21 2	30 21	1 8	11 56												
Full Moon 2 day, 8 morn.																							
Last Quarter 9 day, 2 aftern.																							
New Moon 16 day, 8 morn.																							
First Quarter 23 day, 10 night																							
Full Moon 31 day, 8 night.																							
M	W	Festival days.	Asp. & weath.	☉	☿	♈	♉	♊	♋	♌	♍												
1	W	♀ rif. 1.58m	♂ ☉ ♂	9	0	7	5	9	11	5	0												
2	T	Visit. V.M.	8 ♀ ♀	10	0	7	5	10	12	5	12												
3	F	♂ rif. 3.31m	Thun-	11	0	8	5	11	13	6	25												
4	S	Tr. St. Mar.	der at	12	0	8	5	11	15	7	8												
5	D	♂ Su. aft. T.	the be-	13	0	8	5	12	16	7	21												
6	M	♂ lo. 1.26m	* ♀ ♀	14	0	8	4	13	17	8	4												
7	T	Cam. Com.	gin-	15	0	8	4	13	18	8	18												
8	W	[T. Beck.	ning.	16	0	8	4	14	19	0	1												
9	T	♀ rif. 1.58m	More	17	0	8	4	14	21	9	15												
10	F	♂ rif. 1.13m	mild	18	0	8	4	15	22	9	0												
11	S	♀ set 8.48n	and	19	0	8	4	16	23	9	14												
12	D	♂ Su. aft. T.	plea-	19	1	9	4	16	24	9	23												
13	M	Oxford aft	tant.	20	1	9	4	17	26	9	13												
14	T	♂ lo. 0.48m	♂ D ♀	21	1	9	3	18	27	9	27												
15	W	Swithin	♂ D ♂	22	1	9	3	18	28	9	12												
16	T	♀ rif. 2.6m	* ♀ ♀	23	1	9	3	19	29	9	26												
17	F	♂ rif. 0.47m	♂ D ♂	24	1	9	3	20	30	9	10												
18	S	Oxf. T. ends	♂ D ♀	25	1	9	3	20	2	8	23												
19	D	♂ Su. aft. T.		26	1	9	3	21	3	8	0												
20	M	Margaret	To-	27	1	9	3	22	4	7	19												
21	T		wards	28	1	10	3	22	5	7	1												
22	W	Magdalen	the end	29	1	10	2	23	6	6	14												
23	T	Mag. Co. E.	thun-	30	1	10	2	24	8	5	20												
24	F		der.	1	1	10	2	24	9	5	7												
25	S	St. James	8 ☉ ♀	2	1	10	2	25	10	4	19												
26	D	♂ Su. aft. T.	St Ann	3	1	10	2	26	11	3	1												
27	M	♂ lo. 11.50n	♂ ☉ ♀	4	1	10	2	26	12	2	13												
28	T	♀ rif. 2.23m	and	5	1	10	2	27	14	2	26												
29	W	♂ rif. 0.4m	rain.	6	1	10	2	28	15	1	8												
30	T			7	2	10	1	28	16	0	21												
31	F			8	2	HO	1	29	17	0	4												
D	D. L.	Sun beg.	Sun rise	Sun set.	D. L.	eng. of D.	Day dec.	Declination.															
1		3 43	8 17		16 34	0 4	☉	n	♈	n	♈	n	♈	n	♈	n	♈	n	♈	n	♈	n	
7	all	3 47	8 13	Day	16 26	0 12	23	7	12	0	19	58	19	30	24	0	21	1	18	36			
13		3 52	8 8		16 16	0 22	22	36	11	54	20	5	19	41	23	41	22	3	16	25			
19		3 59	8 1		16 20	0 36	21	50	11	47	20	11	19	52	23	16	22	43	14	43			
25	0 47	4 7	7 53	11 13	15 46	0 52	20	51	11	39	20	16	20	3	22	44	23	0	13	58			
							19	39	11	32	20	21	20	15	22	5	22	53	14	23			

[illegible]

SEPTEMBER hath XXX Days.

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Par.</td><td>fh. beg.</td><td>8</td><td>4</td><td>13</td><td>28</td><td>19</td><td>27</td><td>2</td><td>8</td><td>33</td><td>4</td><td>51</td></tr><tr><td>2</td><td>W</td><td>Lond. burnt</td><td>♂ ♀ ♀</td><td>9</td><td>4</td><td>13</td><td>28</td><td>20</td><td>28</td><td>4</td><td>23</td><td>4</td><td>5</td><td>8</td></tr><tr><td>3</td><td>T</td><td>♀ ri. 4. 10m</td><td>Brisk wind.</td><td>10</td><td>4</td><td>13</td><td>28</td><td>21</td><td>29</td><td>6</td><td>7</td><td>8</td><td>5</td><td>5</td></tr><tr><td>4</td><td>F</td><td>h rif. 9. 54n</td><td>□ ⊙ ♀</td><td>11</td><td>4</td><td>13</td><td>28</td><td>22</td><td>2</td><td>10</td><td>6</td><td>11</td><td>6</td><td>4</td></tr><tr><td>5</td><td>S</td><td>4 fo. 9. 4n</td><td>♂ ♀ ♀</td><td>12</td><td>4</td><td>13</td><td>28</td><td>22</td><td>3</td><td>12</td><td>20</td><td>21</td><td>3</td><td>11</td></tr><tr><td>6</td><td>D</td><td>14 S. aft. T.</td><td>♂ ♀ ♀</td><td>13</td><td>4</td><td>13</td><td>28</td><td>22</td><td>3</td><td>12</td><td>20</td><td>21</td><td>3</td><td>11</td></tr><tr><td>7</td><td>M</td><td>Na. B. V. M.</td><td>with thunder</td><td>14</td><td>4</td><td>13</td><td>28</td><td>23</td><td>4</td><td>14</td><td>4</td><td>5</td><td>12</td><td>7</td></tr><tr><td>8</td><td>T</td><td>♀ ri. 4. 30m</td><td>♂ ♀ ♀</td><td>15</td><td>4</td><td>13</td><td>28</td><td>24</td><td>5</td><td>15</td><td>17</td><td>52</td><td>0</td><td>56</td></tr><tr><td>9</td><td>W</td><td>h ri. 9. 33 n</td><td>Showers</td><td>16</td><td>4</td><td>13</td><td>27</td><td>24</td><td>7</td><td>17</td><td>1</td><td>18</td><td>on</td><td>16</td></tr><tr><td>10</td><td>F</td><td>4 fo. 8. 41 n</td><td>♂ ♀ ♀</td><td>17</td><td>4</td><td>13</td><td>27</td><td>26</td><td>9</td><td>21</td><td>27</td><td>37</td><td>2</td><td>31</td></tr><tr><td>11</td><td>S</td><td>15 S. aft. T.</td><td>♂ ♀ ♀</td><td>18</td><td>4</td><td>13</td><td>27</td><td>26</td><td>10</td><td>23</td><td>10</td><td>28</td><td>3</td><td>26</td></tr><tr><td>12</td><td>D</td><td>Holy Cross</td><td>of rain.</td><td>19</td><td>4</td><td>13</td><td>27</td><td>27</td><td>12</td><td>25</td><td>23</td><td>8</td><td>4</td><td>11</td></tr><tr><td>13</td><td>M</td><td>24 fo. 8. 24</td><td>Good harvest</td><td>20</td><td>4</td><td>13</td><td>27</td><td>27</td><td>13</td><td>26</td><td>5</td><td>3</td><td>6</td><td>4</td></tr><tr><td>14</td><td>T</td><td>Ember We.</td><td>wea-ther.</td><td>21</td><td>4</td><td>13</td><td>27</td><td>29</td><td>15</td><td>28</td><td>17</td><td>53</td><td>5</td><td>0</td></tr><tr><td>15</td><td>W</td><td>Lambert</td><td>♂ ♀ ♀</td><td>22</td><td>4</td><td>13</td><td>27</td><td>28</td><td>14</td><td>28</td><td>17</td><td>53</td><td>5</td><td>0</td></tr><tr><td>16</td><td>F</td><td>♀ ri. 7. 1 m</td><td>♂ ♀ ♀</td><td>23</td><td>4</td><td>13</td><td>27</td><td>29</td><td>15</td><td>28</td><td>17</td><td>53</td><td>5</td><td>0</td></tr><tr><td>17</td><td>S</td><td>h rif. 9. 1 n</td><td>♂ ♀ ♀</td><td>24</td><td>5</td><td>13</td><td>27</td><td>29</td><td>17</td><td>2</td><td>11</td><td>57</td><td>4</td><td>55</td></tr><tr><td>18</td><td>D</td><td>16 S. aft. T.</td><td>♂ ♀ ♀</td><td>25</td><td>5</td><td>13</td><td>27</td><td>29</td><td>18</td><td>3</td><td>23</td><td>50</td><td>4</td><td>33</td></tr><tr><td>19</td><td>M</td><td>St. Matthew</td><td>♂ ♀ ♀</td><td>26</td><td>5</td><td>13</td><td>27</td><td>29</td><td>19</td><td>5</td><td>5</td><td>39</td><td>3</td><td>59</td></tr><tr><td>20</td><td>T</td><td>K. G. III. c.</td><td>♂ ♀ ♀</td><td>27</td><td>5</td><td>13</td><td>27</td><td>29</td><td>20</td><td>7</td><td>17</td><td>31</td><td>3</td><td>15</td></tr><tr><td>21</td><td>W</td><td>24 fo. 7. 57 n</td><td>♂ ♀ ♀</td><td>28</td><td>5</td><td>13</td><td>27</td><td>29</td><td>21</td><td>8</td><td>29</td><td>31</td><td>2</td><td>22</td></tr><tr><td>22</td><td>T</td><td>h rif. 8. 43n</td><td>♂ ♀ ♀</td><td>29</td><td>5</td><td>13</td><td>27</td><td>29</td><td>22</td><td>10</td><td>11</td><td>36</td><td>4</td><td>22</td></tr><tr><td>23</td><td>F</td><td>St. Cyprian</td><td>♂ ♀ ♀</td><td>30</td><td>5</td><td>13</td><td>27</td><td>29</td><td>23</td><td>12</td><td>24</td><td>10</td><td>0</td><td>16</td></tr><tr><td>24</td><td>S</td><td>17 S. aft. T.</td><td>♂ ♀ ♀</td><td>1</td><td>5</td><td>13</td><td>27</td><td>29</td><td>24</td><td>13</td><td>7</td><td>3</td><td>1</td><td>52</td></tr><tr><td>25</td><td>D</td><td>St. Jerome</td><td>♂ ♀ ♀</td><td>2</td><td>5</td><td>13</td><td>27</td><td>29</td><td>25</td><td>15</td><td>20</td><td>18</td><td>2</td><td>0</td></tr><tr><td>26</td><td>M</td><td>Hare-h. b.</td><td>♂ ♀ ♀</td><td>3</td><td>5</td><td>13</td><td>27</td><td>29</td><td>26</td><td>16</td><td>4</td><td>3</td><td>3</td><td>12</td></tr><tr><td>27</td><td>T</td><td></td><td>♂ ♀ ♀</td><td>4</td><td>5</td><td>13</td><td>27</td><td>29</td><td>27</td><td>18</td><td>12</td><td>3</td><td>56</td><td>8</td></tr><tr><td>28</td><td>F</td><td></td><td>♂ ♀ ♀</td><td>5</td><td>5</td><td>13</td><td>27</td><td>29</td><td>28</td><td>20</td><td>2</td><td>46</td><td>4</td><td>36</td></tr><tr><td>29</td><td>S</td><td></td><td>♂ ♀ ♀</td><td>6</td><td>5</td><td>13</td><td>27</td><td>29</td><td>29</td><td>21</td><td>17</td><td>36</td><td>4</td><td>58</td></tr><tr><td>30</td><td>W</td><td></td><td>♂ ♀ ♀</td><td>7</td><td>5</td><td>13</td><td>27</td><td>29</td><td>30</td><td>23</td><td>2</td><td>33</td><td>5</td><td>0</td></tr></table>															W	D	Festival days.	Alp. & weath.	W	h	h	h	h	h	h	h	h	h	h	1	T	Giles. Par.	fh. beg.	8	4	13	28	19	27	2	8	33	4	51	2	W	Lond. burnt	♂ ♀ ♀	9	4	13	28	20	28	4	23	4	5	8	3	T	♀ ri. 4. 10m	Brisk wind.	10	4	13	28	21	29	6	7	8	5	5	4	F	h rif. 9. 54n	□ ⊙ ♀	11	4	13	28	22	2	10	6	11	6	4	5	S	4 fo. 9. 4n	♂ ♀ ♀	12	4	13	28	22	3	12	20	21	3	11	6	D	14 S. aft. T.	♂ ♀ ♀	13	4	13	28	22	3	12	20	21	3	11	7	M	Na. B. V. M.	with thunder	14	4	13	28	23	4	14	4	5	12	7	8	T	♀ ri. 4. 30m	♂ ♀ ♀	15	4	13	28	24	5	15	17	52	0	56	9	W	h ri. 9. 33 n	Showers	16	4	13	27	24	7	17	1	18	on	16	10	F	4 fo. 8. 41 n	♂ ♀ ♀	17	4	13	27	26	9	21	27	37	2	31	11	S	15 S. aft. T.	♂ ♀ ♀	18	4	13	27	26	10	23	10	28	3	26	12	D	Holy Cross	of rain.	19	4	13	27	27	12	25	23	8	4	11	13	M	24 fo. 8. 24	Good harvest	20	4	13	27	27	13	26	5	3	6	4	14	T	Ember We.	wea-ther.	21	4	13	27	29	15	28	17	53	5	0	15	W	Lambert	♂ ♀ ♀	22	4	13	27	28	14	28	17	53	5	0	16	F	♀ ri. 7. 1 m	♂ ♀ ♀	23	4	13	27	29	15	28	17	53	5	0	17	S	h rif. 9. 1 n	♂ ♀ ♀	24	5	13	27	29	17	2	11	57	4	55	18	D	16 S. aft. T.	♂ ♀ ♀	25	5	13	27	29	18	3	23	50	4	33	19	M	St. Matthew	♂ ♀ ♀	26	5	13	27	29	19	5	5	39	3	59	20	T	K. G. III. c.	♂ ♀ ♀	27	5	13	27	29	20	7	17	31	3	15	21	W	24 fo. 7. 57 n	♂ ♀ ♀	28	5	13	27	29	21	8	29	31	2	22	22	T	h rif. 8. 43n	♂ ♀ ♀	29	5	13	27	29	22	10	11	36	4	22	23	F	St. Cyprian	♂ ♀ ♀	30	5	13	27	29	23	12	24	10	0	16	24	S	17 S. aft. T.	♂ ♀ ♀	1	5	13	27	29	24	13	7	3	1	52	25	D	St. Jerome	♂ ♀ ♀	2	5	13	27	29	25	15	20	18	2	0	26	M	Hare-h. b.	♂ ♀ ♀	3	5	13	27	29	26	16	4	3	3	12	27	T		♂ ♀ ♀	4	5	13	27	29	27	18	12	3	56	8	28	F		♂ ♀ ♀	5	5	13	27	29	28	20	2	46	4	36	29	S		♂ ♀ ♀	6	5	13	27	29	29	21	17	36	4	58	30	W		♂ ♀ ♀	7	5	13	27	29	30	23	2	33	5	0
W	D	Festival days.	Alp. & weath.	W	h	h	h	h	h	h	h	h	h	h																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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7	M	Na. B. V. M.	with thunder	14	4	13	28	23	4	14	4	5	12	7																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
8	T	♀ ri. 4. 30m	♂ ♀ ♀	15	4	13	28	24	5	15	17	52	0	56																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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10	F	4 fo. 8. 41 n	♂ ♀ ♀	17	4	13	27	26	9	21	27	37	2	31																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
11	S	15 S. aft. T.	♂ ♀ ♀	18	4	13	27	26	10	23	10	28	3	26																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
12	D	Holy Cross	of rain.	19	4	13	27	27	12	25	23	8	4	11																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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15	W	Lambert	♂ ♀ ♀	22	4	13	27	28	14	28	17	53	5	0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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18	D	16 S. aft. T.	♂ ♀ ♀	25	5	13	27	29	18	3	23	50	4	33																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
19	M	St. Matthew	♂ ♀ ♀	26	5	13	27	29	19	5	5	39	3	59																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
20	T	K. G. III. c.	♂ ♀ ♀	27	5	13	27	29	20	7	17	31	3	15																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
21	W	24 fo. 7. 57 n	♂ ♀ ♀	28	5	13	27	29	21	8	29	31	2	22																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
22	T	h rif. 8. 43n	♂ ♀ ♀	29	5	13	27	29	22	10	11	36	4	22																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
23	F	St. Cyprian	♂ ♀ ♀	30	5	13	27	29	23	12	24	10	0	16																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
24	S	17 S. aft. T.	♂ ♀ ♀	1	5	13	27	29	24	13	7	3	1	52																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
25	D	St. Jerome	♂ ♀ ♀	2	5	13	27	29	25	15	20	18	2	0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
26	M	Hare-h. b.	♂ ♀ ♀	3	5	13	27	29	26	16	4	3	3	12																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
27	T		♂ ♀ ♀	4	5	13	27	29	27	18	12	3	56	8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
28	F		♂ ♀ ♀	5	5	13	27	29	28	20	2	46	4	36																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
29	S		♂ ♀ ♀	6	5	13	27	29	29	21	17	36	4	58																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
30	W		♂ ♀ ♀	7	5	13	27	29	30	23	2	33	5	0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	

		D	D L.	Sun	Sun	D.L.	leng.	Day	Declination.											
		beg.	rife	fet.	ends	of D.	dec.		⊙	n	♂	n	♂	n	♀	n	♂	n	♀	n
16	0	1	3	5	12	648	8 55	1336	3	2	8	14	10	42	20	39	21	12	16	1
17	34	7	3	22	5	24	636	8 38	13	12	6	0	10	34	20	40	21	16	14	49
18	33	13	3	38	5	36	624	8 22	12	48	3	50	3	40	10	26	20	40	21	20
18	17	19	3	53	5	48	612	8 7	12	24	4	14	1	24	10	19	20	40	21	21
16	21	25	4	46	0	6	0	7 56	12	0	4	38	0	f. 56	10	11	20	40	21	21

Geocentric Latitude.

OCTOBER hath XXXI Days.

D	h	f	δ	n	♀	♂
1	0 44	1 50	0 42	1 15	1 23	0 42
13	0 44	1 51	0 42	1 16	1 11	2 3
25	0 44	1 52	0 42	1 17	0 52	2 54

Heliocentric Longitude.

D	h	Π	♄	♅	♆	♇	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
1	4	11	7	53	8	25	21	24	29	21	2	26	25	2	26	25	2	26
7	4	15	8	6	8	56	24	1	8	53	18	56	24	4	18	56	24	4
13	4	20	8	20	9	28	26	39	18	34	5	54	24	18	34	5	54	24
19	4	25	8	33	9	59	29	16	28	13	23	30	25	4	23	30	25	4
25	4	30	8	46	10	31	1	53	7	51	13	5	15	13	5	15	13	5

Last Quart. 5 day, 7 morn.
 New Moon 12 day, 10 nig.
 First Quart. 21 day, 3 mor.
 Full Moon 28 day, 2 morn.

M	W	Festival days.	Asp. & weath.	☉	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓	lat	de.	rites.
1	T	Remig. Ph.	(h. be.	8	5	13	27	8	4	24	17	20	4	42	12	33	7a 52		
2	F	h. ri. 8. 14 n		9	5	13	27	9	5	26	2	15	4	5	16	38	8 27		
3	S	8 set 6. 8 n	Some	10	5	13	27	9	6	27	16	44	3	12	19	36	9 10		
4	D	18 S. aft. T.	showers	11	6	13	27	10	8	29	0	54	2	9	21	18	10 5		
5	M	4 fo. 7. 15 n	at the	12	6	13	27	11	9	m	14	43	1	0	21	30	10 5		
6	T	Faith	begin-	13	6	13	27	11	10	2	28	13	on	11	20	43	Morn		
7	W	h. ri. 7. 56 n	ing.	14	6	13	27	12	11	3	11	Ω	25	1	20	18	39	0 2	
8	T	8 set 6. 3 n	Δ h ♀	15	6	13	27	13	13	4	24	22	2	24	15	40	1 10		
9	F	St. Denys	♂ ♀ ♂	16	6	13	28	13	14	6	7	m	6	3	10	11	50	2 26	
10	S		* ♂ ♀	17	6	13	28	14	15	7	19	40	4	3	7	40	3 17		
11	D	19 S. aft. T.	Win.	18	6	13	28	14	16	9	2	3	4	35	3	23	4 36		
12	M	4 fo. 6. 51 n	♂ ♀	19	6	13	28	15	18	10	14	10	4	54	1	8	D sets		
13	T	Tr. K. Ed. C.	with	20	6	13	28	16	10	11	26	26	4	50	5	33	6 a 4		
14	W	Calixt. PM.	♂ ♀	21	6	13	28	16	20	13	8	m	26	4	51	9 43	6 25		
15	T	h. ri. 7. 25 n	showers	22	6	13	28	17	21	14	20	20	4	31	13	30	6 47		
16	F	8 set 5. 50 n	♂ ☉ ♀	23	6	13	28	18	23	15	2	f	10	3	58	16	43	7 17	
17	S	Ethel. Virg.		24	6	13	28	18	24	16	13	58	3	16	19	15	7 48		
18	D	20 S. aft. T.	S Luke	25	6	13	28	19	25	18	25	48	2	24	20	50	8 26		
19	M	St. Frid.	Turbu-	26	6	13	28	19	26	1	7	45	1	26	21	48	9 13		
20	T		♂ ♀ ♄	27	6	13	28	20	28	20	10	53	0	23	21	36	10 8		
21	W	h. ri. 7. 2 n	□ ☉ ♄	28	6	13	28	21	29	21	2	17	of	42	20	21	11 13		
22	T	4 fo. 6. 16 n		29	6	13	28	21	m	22	15	3	1	48	18	3	Morn		
23	F		lent air,	m	6	13	29	22	1	23	28	15	2	50	14	45	0 10		
24	S		but more	1	7	12	29	23	3	24	11	X	56	3	44	10	32	1 30	
25	D	21 S. aft. T.	G. III.	2	7	12	29	23	4	25	26	8	4	26	5	37	2 47		
26	M	K. G. III. pr.	[accef.	3	7	12	29	24	5	26	10	r	48	4	53	0	13	4 8	
27	T	[Crispin	* ♂ ♀	4	7	12	29	24	7	27	25	50	5	1	5	n	5	Drif.	
28	W	St. Si. & Ju.	mild,	5	7	12	29	25	8	28	11	8	4	4	47	10	37	5a 54	
29	T		with	6	7	12	29	26	9	29	26	20	4	13	15	15	6 27		
30	F	h. ri. 6. 26 n	showers	7	7	12	29	26	10	29	11	Π	26	3	21	18	51	7 7	
31	S	4 fo. 5. 46 n	at the	8	7	12	29	27	12	f	26	15	2	17	12	1	7 50		

D	D. L.	Sun beg.	Sun rise	Sun sets	D. L.	leng. of D.	Day dec.	Declination.														
1	4	15	6 11	5 40	7	45	11 38	5 0	☉	f	♈	n	h	n	♊	f	♈	r	♀	f	♏	f
7	4	28	6 23	5 37	7	32	11 14	5 24	3	16	10	3	20	30	21	20	9	26	0	31	10	14
13	4	41	6 35	5 25	7	10	10 50	5 40	5	36	9	56	20	37	21	17	8	4	3	32	14	2
19	4	52	6 41	5 14	7	8	10 28	6 10	7	52	9	50	20	35	21	13	6	38	6	32	17	21
25	5	2	6 57	5 2	6	58	10 6	6 32	10	5	9	43	20	33	21	8	5	11	9	27	20	5
									12	12	9	37	20	31	21	1	3	43	12	13	22	5

NOVEMBER hath XXX Days.

1.	1	5	14	7	10	4	5	6	4	9	4	6	5	1	8	n	h	n	4	f	♂	n	♀	f	♀	
14	7	5	24	7	21	13	6	3	6	9	18	7	2	14	32	9	31	20	27	20	51	1	59	15	15	23
2	13	5	30	7	30	13	6	3	0	9	0	7	3	16	28	9	27	20	24	20	41	0	31	17	35	32
21	10	5	36	7	30	4	2	1	6	24	8	4	2	18	4	9	23	20	21	20	30	0	57	19	39	19
5	25	5	43	7	48	4	1	2	6	17	8	24	8	19	33	9	20	20	17	20	18	2	24	21	23	15
5														20	50	9	18	20	13	20	4	3	50	22	44	14

Geocentric Latitude.

DECEMBER hath XXXI Days.

L	W	n	h f.	4 f.	♂ n	♀ f.	♀ n
1	0	46	1	52	0	41	1 18 0 33 2 27
13	0	46	1	51	0	41	1 17 0 59 1 9
25	0	47	1	49	0	41	1 15 1 20 of 20

Heliocentric Longitude.

D	8	7	h	II	4	3	7	2	5	9	3	2	1	3	2	1
1	4	5	9	10	9	13	46	18	5	6	42	38	4	22	13	5
7	5	3	10	22	14	17	20	44	16	11	24	25	21	35	21	35
13	5	7	10	35	14	49	23	23	25	40	17	17	20	57	20	57
19	5	12	10	49	15	21	26	3	5	3	6	11	3	6	11	3
25	5	17	11	3	15	28	28	43	14	39	24	10				

Last Quart. 3 day, 8 morn.
 New Moon; 11 day, 11 mo.
 First Quart. 19 day, 7 mor.
 Full Moon 25 day, 10 night.

M D	Festival Days.	Afp. & weath.	☉	☽	♂	♀	♂	♀	D	D lat.	D dec.	D
M D			♂	♂	♂	♀	♀	♀	Ω	nor.	north	rises
1 T	2 f. 8. 16. n	Vari-	9	8	10	4	16	20	17 19	2 19	17 52	94
2 W	Bilb. V.M.	♂ D ☼	10	8	10	4	17	22	19 36	3 20	14 23	11
3 T	h fo. 11. 52n	able	11	8	10	4	17	23	20 13	4 8	10 18	Mo
4 F	Barbary		12	8	10	5	18	24	22 26	3 4	43 5	54
5 S	8 ri. 6. o.m	♂ D ♂	13	8	9	5	18	25	23 8	20 5	4 1	20
6 D	2 Su.in Adv.	Nich.	14	8	9	5	19	27	24 20	26 5	11 3	11
7 M	2 fet 7. 57 n		15	8	9	5	20	28	25 2 m	23 5	4 7	33
8 T	Co. B.V.M.		16	8	9	5	20	29	26 14	16 4	45 11	36
9 W	h fo. 11. 24n	♂ D ♀	17	8	9	6	21	30	28 7	4 13	15 12	5
10 T	8 ri. 6. 15m		18	8	9	6	21	2 29	7 57	3 30	18 12	6
11 F	2 fe. 7. 45n	rain or	19	8	9	6	22	3	19 50	2 38	20 27	D sets
12 S		♂ D ♀	20	8	9	6	23	4	2 16	16 1	39 21	48
13 D	3 Su.in Adv.	Lucy	21	R	9	6	23	5	3 13	47 0	35 22	10
14 M	h fo. 11. 1n	♂ D ♀	22	8	9	7	24	7	5 25	55 0	32 21	30
15 T	8 rif. 6. 34m	△ ☼ ♀	23	8	9	7	24	8	6 8	13 1	38 19	48
16 W	O.S. C.T.e	Em.	24	8	9	7	25	9	8 20	44 2	41 17	8
17 T	Oxf. Te.	□ ☼ ♀	25	8	8	7	26	11	9 3	30 3	37 13	36
18 F	h fo. 10. 43n	* ☉ ♂	26	8	8	7	26	12	10 16	35 4	23 9	20
19 S	8 rif. 6. 51m		27	8	8	8	27	13	12 0	35 1	4 31	Morn
20 D	4 Su.in Adv.	snow, and vari- able to	28	8	8	8	27	14	13 13	51 5	14 on	40
21 M	St. Thomas		29	8	8	8	28	15	15 28	55 5	12 5	56
22 T	Shortest da.		30	8	8	8	29	16	12 8	41 4	51 11	2
23 W	h fo. 10. 19n	♂ D h	1	8	8	8	29	17	18 27	34 4	11 15	34
24 T		the end.	2	8	8	9	m	19	12 12	38 3	12 19	0
25 F	Christm. d.		3	8	8	9	0	21	21 27	43 2	0 21	26
26 S	St. Stephea		4	8	8	9	1	22	22 12	35 0	40 22	11
27 D	1 S. aft. Chr.	St. Jo.	5	8	8	9	2	23	24 27	23 on	41 21	22
28 M	Innocents		6	8	8	10	2	24	26 11	Ω 42	1 58	10
29 T	h fe. 9. 29 n	△ ☉ ☼	7	8	8	10	3	26	27 25	36 3	5 15	54
30 W			8	8	8	10	3	27	29 9	m 3	4 0	11
31 T	Silvester	□ ☼ h	9	8	7	10	4	28	32 5	41 7	26 10	55

D	D. L. beg.	Sun rise	Sun set.	D. L. ends	leng. of D.	Day dec.	Declination.											
							⊙	f.	h.	n	h	n	24 f	♂ f	♀ f	♂ f	♀ f.	
1	5 48	7 54	4 6	6 12	8 12	8 26	21	52	9	16	20	10	1948	5 15	23	42	15 7	
7	5 54	8 04	0 6	6 6	8 08	8 38	22	40	9	15	20	6	1932	6 39	24	14	17, 21	
13	5 57	8 33	57	6 3	7 54	8 44	23	12	9	15	20	2	1915	8 0	24	19	19 47	
19	5 59	8 53	55	6 1	7 50	8 48	23	27	9	16	19	58	18 55	9 18	23	57	21 55	
25	5 50	8 53	55	6 1	7 50	8 48	23	25	9	17	19	55	18 35	10 36	23	8	23 32	

An

- I. Sleep
- II. Location
- III. Knowledge
- IV. Memory
- V. Shape

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Answers to the Enigmas, Rebuses, Charades, &c.

Enigmas.		Rebuses.	Charades.
I. Sleep	VI. Honey	I. Enigma	I. Rushton
II. Lock	VII. Time	II. Nield	II. Wind-mill
III. Key	VIII. Justice	III. Fildes	III. Cotton
IV. Mill	IX. or Prize a	IV. Lieutenant	IV. Bagpipe
V. Shoe	Top		V. Penmanship.

ANSWERS TO THE PRIZE ENIGMA.

1. By Mr. John Rimmer, Liverpool.

Ye hosts, angelic powers divine, To your suppliant's suit incline; Have pity on my tender youth, And guide me in the ways of truth. O teach my mind aloft to soar, And pant for things on earth no more;	On proper Topics, as I ought, Let me alone employ my thought; Your attribute sweet friendship give And let me all its joys receive, And fit me, as I grow in years, For your immortal happy spheres.
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2. By Mr. John Fildes, Schoolmaster, in Liverpool.

Accept, kind Sirs, my thanks for favours past,
Thou art with too of a friend pray bear;
Oh may your Diary while time shall last,
Prove more successful each succeeding year.

3. By the Reverend J. Shakleton, Thornton, Yorkshire.

Steep is the hill, and craggy is the way,
Which leads to science—shall I give up? nay,
I'll boldly persevere, and win the Top;
Then honour crowns me, and my fears will drop.

4. By Mr. John Savage, Smithalong Grove.

How many seek to gain an honour'd name,
The Top-most pinnacle of worldly fame,
And try their utmost efforts to ascend,
As tho' this earthly glory ne'er would end.

5. By Mr. John Carwithen.

When on Mount Sinai Top, the trump did sound,
The Israelites stood trembling around;
Their hearts impure, none durst ascend the mount;
All begg'd that Moses might the word recount.
But when the solemn trump shall rend the sky,
And Christ appear in robes of majesty,
Both bond and free shall hear his powerful word:
Awake ye dead, come forth to meet your GOD.

6. By Mr. Olinthus Gilbert Gregory, Schoolmaster, Taxley, Hants.

ADDRESS (of a Person who, on a slight umbrage, had left his
friends and home) to his Soul.

Where would'st thou rove my wav'ring soul, dear spark of ambient
flame,
Can nought thy airy dreams controul, can nought thy fancy tame.

Lamp of my life, small chink of light, thro' which I faintly see
 A radiant glimmer, dimly bright, of immortality.
 Where would'st thou rove, is life a jest, a dance upon this sphere,
 Inscrib'd in pleasure's specious vest, and spent—no matter where.
 And independence, what is that, a good, or feign'd, or real,
 Made by no laws, no clime, no state, 'tis thine alone can feel.
 Ah! then return! from dreams like this, return my soul to prove,
 The sweets of home, of social bliss, of friendship, peace, and love.
 Let reason, let religion lead thee hence in wisdom's road,
 So shall thy wings unerring speed to virtue, and to GOD.

7. By Mr. John Youart, Schoolmaster, Glazedale, near Whitby,
 Yorkshire.

When first I read the mystic prize, my thoughts were at a stop,
 But at the last my muse replies, the answer's sure a TOP.

Other ingenious and separate answers were given by Messrs. Broomwott,
 Brown, Fox, Norris, Pozuel, Saul, Wood, Amo Zyibeon, and Autodidactus.

GENERAL ANSWERS TO THE ENIGMAS.

1. A Hymn to Retirement. By Mr. John Savage.

Celestial friend, O may I often find,
 Thy soft'ning influence to sooth mankind.

And draw my soul from transitory things,
 Where I, by thee, inspir'd am led to see,
 How good it is to wait in fervency,

On Christ, the everlasting King of Kings;
 Who died for us, and broke the chain of sins
 Which Satan, by his art, had brought us in.

2. In towns and cities, where confusion dwells,
 When barber'd fops, and flaunting beaux and belles

Delighted pass along the crowded street;

Where grinding chariot wheels the ears confuse,
 And sparkling fire oft darteth from their Shoes,

Of the poor flogged horses nimble feet;
 These hateful scenes, where vice and folly reigns,
 E'er dost forego for the remotest plains.

3. Within the still sequester'd rural vale,
 Where fragrant Sweets are born on ev'ry gale,

Thou always dost erect thy ivy throne;

Where I (as Sol declines the glowing west,
 And toiling nature seems prepar'd for rest)

Do oft enjoy my Time with thee alone,
 In thee, forsaking this delusive world,

In falsehood, and in Justice, hourly hurl'd.

4. By thee, retirement I am made to hear,
 The small voice that whispers in my ear,

As spoke to good Elijah long ago;

Whereby attending to his sacred voice,

My fainting heart is made for to rejoice,

And praise the Lord, from whence these comforts flow;

Nor will he e'er forsake his children dear,

Who in retirement seek with hearts sincere.

4. Mill.

5.

6. Honey.

7.

8.

Prize.

1 Kings, ch. 19. v. 12.

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This world's a *Sleep*, and *Lock'd* from doing good, 1. 2.
Because it David's *Keys* ne'er understood. 3.

2. *On a Dream.* By Thomas Fox, Norton, Derbyshire.

<p>As <i>Sleeping</i> in my bed I lay, Secured well by <i>Lock</i> and <i>Key</i>, Methought I saw <i>Don Quixot's Mill</i>, Fix'd on the <i>Top</i> of yonder hill; Where <i>Thyme</i> & <i>Honeyfuckles</i> grew, And flocks as black as any <i>Shoe</i>. Just then appeared in the field, <i>Lieutenant Fildes</i>, <i>Justice Nield</i>.</p>	<p>So fam'd for <i>Penmanship</i> and wit, That one the prize <i>Enigma</i> writ; Then Captain <i>Rushton</i> with his train, Came prancing o'er the dusty plain, With <i>Bagpipes</i>, guns, & <i>Cotton flags</i>, They knock'd the <i>Windmill</i> all to rags; But ah! th' explosion and the scream, Arous'd me from my horrid dream.</p>
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3. *The Invocation.* By Autodidactus, Ramptoniensis.

<p>No earthly muse will I invoke, Nor crave aid of the tuneful nine, Such heathen names I here reject, And sue to one that's more divine. 'Tis thee, great God, that I address, Nor give <i>Sleep</i> to my weeping eyes; My bed with trickling tears I'll wet, 'Till thou attendest to my cries. Thy <i>Key</i> & <i>Lock</i> up our hearts from vice, Nor let our feet far from thee slide;</p>	<p>Feed us with <i>Honey</i> of thy word, And chace from us all human pride, Teach us our <i>Time</i> for to improve, Nor grind our corn at folly's <i>Mill</i>, To soar to th' happy realms above, And mount the <i>Top</i> of <i>Sion's</i> hill. May <i>Justice</i> all our steps pervade, To love thee may we never cease, Then shall thou banish war's alarms, And grant us lasting health and peace.</p>
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4. *Life transient and unprofitable.* By Mr. Philip Norris, Liverpool.

<p><i>Time</i> slides away, e'en as a <i>Mill</i> revolves, How vain and transient are our firm resolves; How short, at most, are all our earthly days, E'er secure in life, we're <i>Lockt</i> in <i>Sleep</i> and ease. What then avails the cares and toils of life, Or store of wealth, acquir'd with pain and strife; Honour or fame, which heroes seek in wars, <i>Topics</i> of frays, or petty broils and jars. The pen's productions, or enigmas quaiat, Or <i>Honey</i>, <i>Shoes</i>, <i>Keys</i>, or other subject meant; Such things are vain, and merely empty sound, Unless our care for future state abound, 'Tis that and <i>Justice</i>, and true faith unite, Shall high enthrone us in the realms of light.</p>	<p>7. 4. 2. 2. Prize. 6. 5. 3. 8.</p>
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5. *Aramont and Anna, or the Lucky Escape.* By Mr. John Fildes, Schoolmaster, Liverpool.

<p>Young Anna was a lovely lass, Of worthy parents she; And unto Aramont was wed, A gallant seaman he. He did not s<i>Top</i> six months ashore Before to sea he went, And his dear Anna left behind, His absence to lament. Who to <i>Gap's Justice</i>, and his love, Still paid a due regard, And hop'd her husband's safe return Would all her cares re<i>ward</i>, or <i>Key</i></p>	<p>At length the <i>Time</i> drew near that Might him expect at home; [she And she along the shelly shore. At ev'ning oft would roam. [shore One morn some neighbours hir'd a An hour or two to sail; And to be on the party, they On Anna did prevail. [shore, They were not got five miles from Just opposite a <i>Mill</i>, [saw, When something on the waves they And which came nearer still.</p>
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On its approach it prov'd to be,
 A part of a ship's deck ;
 And like a dying *Bee*, a man
 Lay stretch'd upon the wreck.
 Whom they on board their little boat
 In pity quickly drew.
 And found him perishing with cold,
 Without a hat or *Shoe*.
 But I shall not attempt to tell
 How great was the surprize,
 Of Anna, when her Aramont
 She saw before her eyes.

His ship, it seems, the night before,
 About eleven o'clock,
 Had been returning homeward, but
 Had struck against a rock.
 To pieces she was quickly dash'd,
 And scatter'd o'er the deep,
 And all her crew, save Aramont,
 Now in the ocean *Sleep*!
 He on the broken deck till morn,
 Had floated thus distress'd ;
 And he alone escap'd to tell,
 The fate of all the rest.

6. *A Morning Walk and Reflection.* By Mr. Jonathan Wood,
 Schoolmaster, Rusbton, Northamptonshire.

Shall *Sleep* any longer detain me in bed, 1.
 Or empty chimeras amuse my fond head ;
 Neither *Shoe*, *Lock*, nor *Key*, shall prohibit my haste, 5. 2. 3.
 I'm determin'd th' *Sweets* of Aurora to taste. 6. or *Honey*.
 How beautiful the morning, how lovely the scene,
 Now th' fields and the meads are enamell'd with green ;
 Sure nothing can equal the pleasure that's found,
 By viewing yon *Mill* from this fine rising ground. 4.
 How amazingly busy th' birds all appear,
 In building their nests for their young, without fear
 Of the treacherous school-boy, who often destroys
 The elegant structure, and ruins their joys.
 Unfortunate birds, I deplore your sad case,
 And fain would assist you your bliss to replace ;
 May *Justice* preserve you from similar woes, 8.
 And *Timely* s'*Top* all your inveterate foes. 7. Prize.

7. By Mr. John Carawithen.

'Twas at Spithead the fleet unmoor'd did lay,
 When *Top*sails trip, when *Poll* was forc'd away ; 9. Prize.
 Torn from his arms within the *Honey* moon, 6 Enig.
 Ah ! cruel fate, and must we part so soon ?
 Sleepless my nights, when you are far away,
 Ah ! do not *Fildes*, do not trust the sea ;
 Unus'd to war, the sword thou cannot wield,
 I'll haste myself unto *Lieutenant Nield*. 1 Enig.
 With this bank-bill admission it will gain, 3 Reb.
 Perhaps it may thy liberty obtain ;
 If not, thyself can write unto the board, 4, 2 Reb.
 For none with *Penmanship* is better stor'd. 5. Ch.
 Various the subjects that have grac'd thy quill,
 Oft have we sat by *Rusbton Cotton Mill* ; 1, 3 Ch. 4 Enig.
 Else on thy breast reclin'd beneath a shade,
 To hear thee read *Enigmas* thou hast made. 1 Reb.
 With pleasing sonnets from Euterpe's theme,
 For thou hast quaff'd Parnassus flowing stream ;
 Thy graceful numbers lofty thoughts convey,
 Tho' trifling subjects on a *Lock* or *Key*. 2, 3 Enig.
 But *Time* steals on, perhaps e'er now he's gone, 7 Enig
 The van has weigh'd, their *Top*sails sheeted home ;
Justice demands, let no aboding fear, 8 Enig.
 Disturb thy peace, let me wipe off that tear ;

Presaging

Rebuses, &c. Answered.

21.

Prefaging fate faith we shall meet again,
 When by the *Wind-mill* tide I will explain,
 What *Shoes* in India's worn, how zed'ry grow,
 Where on a *Bagpipe* play, or pipe of straw ;
 Bring ev'ry rarity to deck my love,
 For true, as compass points, to you I'll prove.
 She bid farewell, he took a last embrace,
 But perturbation dwelt upon each face.

Other general and ingenious answers were also given by Messrs. Attwood, Brookes, Brown, Calton, Davis, Harrizon, Kingston, Moore, Saul, Sanders, Taylor, Juveniensis, and Woollin.

ANSWERS to the REBUSES and CHARADES.

1. By Mr. Philip Norris, Liverpool.

At the *Wind mill*, or *Cotton*, in fam'd *Rushton* town, 2, 3, I.
 With *Nield*, and with *Fildes*, those bards of renown;
 I'd gladly some ev'ning sit down and regale,
 O'er a bottle of wine, or a tankard of ale ;
 And read some *Enigmas*, or mystic charade,
 On *Bagpipe*, *Lieutenant*, or *Penmanship* made ;
 Or rebus replete with some bards subtle wit,
 While the bumper goes round with a health to the cit.

2. By Mr. Jonathan Wood, Schoolmaster, Rushton.

Ingenious *Nield*, and witty *Fildes*, with ease *Enigmas* plan,
 Their *Penmanship* true pleasure yields to keen discerning man ;
 When *Wind-mill*, *Cotton*, and *Bagpipe*, employ Diarian friends,
 My muse of *Lieutenant* does write, and so with *Rushton* ends.

3. The Happy Cottager. By Mr. John Savage, Smithalong Grove, Towcester.

What happiness attends the man, Who in some sylvan scene remote, Contented spends his little span Within his moss-grown rural cot. Such compliments as towns esteem, So much <i>Enigmas</i> are to him. He laughs at fashion's gaudy train, Nor seeketh beauteous ornament ; All such by him are counted vain, I'th comely russet he's content ; Like <i>Nield</i> or <i>Fildes</i> , strives to find Inward adornings of the mind. Soon as the ruler of the day, From eastern chambers gins his race, Forth to the fields he takes his way, Where all is harmony and peace ; No cares disturb his faithful breast, Sure no <i>Lieutenant's</i> half so blest.	To cheer him in his rigid toil, At <i>Rushton</i> where birds sweetly sing, While mimic echos back recoil, Makes distant woods & valleys ring. Where on the tow'ring hill he sees, The <i>Windmill</i> movewith ev'ry breeze At eve's approach, fatigu'd with toil, He to his peaceful cot retires, Where his dear <i>Thirza</i> , with a smile, Meets him whom she so much ad- mires, [come, While round his prattling offspring Lispering their father welcome home. With romantic novels feign'd, His <i>Bagpipes</i> drives off sad despair. He never does corrupt his mind, His bible is his chiefest care, These zealous strives to understand The <i>Penmanship</i> of David's hand.
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4. On the Death of his Friend. By Mr. John Fildes, Schoolmaster.

J. Fildes, this year, assumes a pensive strain,
 To tell the sorrow that afflicts his heart ;

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For death 'gainst whom all human pow'r is vain,
Has pierc'd his friend with his unerring dart !

Ah ! how uncertain is this life below ;
How short and fleeting are all earthly joys !
For he who was in health a week ago,
Now in the earth's cold bosom breathless lies !

Beside the *Wind-mill* he in *Rushton* dwelt,
Like *Nield* in *Penmanship*, was famous grown ;
He lov'd *Enigmas*, long in *Cotton* dealt,
And was far round like some *Lieutenant* known.

But now his earthly pilgrimage is o'er,
The *Bagpipe* he again will never hear ;
And I, alas ! must see his face no more,
The cause to me of many a trickling tear !

How dread and awful is the hour of death !
And oh ! what scene more solemn can be found ?
Than that wherein a husband yields his breath,
His tender wife and children weeping round.

But nought avails a wife's sad piercing cry,
And nought a son's, and nought a daughter's moan ;
For Death, regardless of their deepest sigh,
With pleasure hears a dying mortal groan.

Other general answers were given by Messrs. Autodidactus, Brown, Brooks, Garwitben, Davis, Fox, Moore, Rimmer, Saul, Turton, & Yewart.

ANSWERS to the QUERIES.

Query 1, answered by Autodidactus, Raptioniensis.

Granting of patents undoubtedly encourages invention, but as certainly clips the wings of improvement ; and as this country is far more renowned for the latter than the former, I am of opinion that considerable benefit would accrue to it from their abolition, providing handsome and suitable rewards were held out to the inventors of any thing of public utility.

Query 2, answered by Mr. John Garwitben.

St. Jude is admonishing the brethren to beware of false teachers, useth this quotation to shew, that no man is perfect ; probably in his manuscript, its Michael contending in the body of Moses. Namely, the passions that are mixt in the human frame, flesh and spirit ; for the word Michael signifies, who is perfect ? Although Moses had greater perfections than any man in his days, yet he could not intirely rule the failings of the flesh, or the imperfections of mortality. St. Jude alludes to the time when he smote the rock at Meribah, without ascribing the power unto God, which brought on that railing accusation in his body, which of these passions should gain the ascendancy, and for a moment gave himself up to the passion that governs this world, and the flesh or the devil overcame the spirit ; but on recollection of what he had done, faith, in his spirit, the Lord rebuke thee.

Query 3, answered by Autodidactus, Raptioniensis.

Working of miracles was an intailable criterion of the divine mission ; if our Saviour and his Apostles must be allowed to have been very necessary for the promulgation of christianity at first, which was not like other absurd and idolatrous religions, to be founded in blood, and propagated by the dint of the sword. But since the secession of miracles,

cles, there are no certain and demonstrative proofs of a divine mission to be had. We must therefore be content with the best we can get, and which must be sought for in the character and conduct of the preacher. Hence I would conclude, that those who exert their utmost endeavours to tread in the steps of their divine master, adding to their faith virtue, and to virtue knowledge, &c have the greatest right to the claim; whether they be found in the established church, or among any of the dissenting protestants.

The same by Mr John Carwithen.

In the primeval age, God gave missions to man. but to those ordained he appeared to, or else they distinctly heard his voice. No man but Moses had a criterion; he wore a veil as an emblem that the law was instituted for the good of man while in mortality, and that the religious ceremonies were only types, to be observed before the performance of the true offering, which was Christ, who offered himself as the true sacrifice once for all the elect; and not as the high priest, who offered every year a lamb as a sacrifice for the people; therefore it is by faith in his blood we obtain the promise, and not by the preaching of any man. For in the present age, all are commissioned by the legislative power, or take a power upon themselves by imagination, and not by any mission given of God.

To each of those that God e'er made a choice,
He did appear, or else they heard his voice;
No marks or missions now are to be given,
For Christ has opened th' gates of heaven.
To all that can believe in truth and spirit,
The heav'nly canon surely will inherit;
By faith alone the promise we obtain,
For Methodists, like other men, are vain.

Query 4, answered by Mr Philip Norris.

Admitting the sense of the record be implied after his resurrection, we do not find in any of the other three gospels, that such things did happen even immediately after that event. But to return to the query, and rely upon his testimony therein contained, it does not appear that the bodies of those which were raised from the grave, were united to their souls as before time; for he says, they appeared unto many, therefore it is evident, if they only appeared, they could be only visionary.

Autodidactus saith,

If he was to attempt an answer to this query, should certainly take the words in their literal sense; for by body must be meant the material body, unless we are to believe, that soul and body sleep together in the dust; which is contrary to reason.

The same by Mr. John Carwithen.

The words of St. Matthew are so very plain, that it needs no farther explanation; the bodies of saints that slept, arose after his resurrection, for visions are not bodies, but produced by imaginary dreams. And though the catholic church has a notion that the soul of man departs from the body, yet it was not the opinion of the Apostles, for they well knew the soul and body died together; for St. Paul saith it is sown in dishonour, and nought is quickened except it die, and that every seed shall have or receive its own body. Which seed implies the soul or quickening spirit. And those bodies that awoke after his resurrection, were quickened in the same spirit that they slept in, being the first mighty example of his second crown of glory, and recorded to

convince the elect, that by his powerful word, that he is able, at the general resurrection, to raise them by the seed when in the grave dead, or asleep, into a celestial body, and to every seed, or soul, its own body.

NEW ENIGMAS.

I. ENIGMA (70) by Mr. John Nuttall, Schoolmaster, Bury, Lancashire.

Attend ye wits, while I relate to you,
The strange vicissitudes I have gone through;
When in my infancy I'm very small,
But when grown old I am exceeding tall.
With arms extended round on ev'ry side,
And am by ruffians stript of all my pride;
Tho' basely us'd, true Britons me revere,
Above my brethren honor me each year.
I o'er my tribe am justly stiled king,
Since I most useful am in ev'ry thing;
Always in woods or groves I may be seen,
Sometimes indeed upon the lovely green.
In summer, clad in vestments quite compleat,
Wherewith I hide my mother from the heat
Of Sols most scorching rays; in winter bare,
Of my green suit, quite fable does appear.
Naked or cloath'd, I stoutly stand the blast
Of blust'ring Boreas; yet I'm doom'd at last,
To fall a victim to the harden'd steel,
Which the rude clown does often cause to feel.
Who not content with laying me quite low,
Makes me, oh fatal! sorrows undergo,
More grievous far, but which I'm forc'd to bear,
For he my skin does off my body tear;
With cruel weapons he my limbs does part,
Which are of use in each mechanic art;
I may be said to guard Britannia's isle,
From the rude efforts of her foes most vile.
But that I may my name more clear impart,
Think on the surname of a British heart.

II. ENIGMA (71) by Mr. John Carwithen.

In days of yore, when martyrdom was rife,
With cruciating pain I've took man's life;
Talus ne'er model'd me for acts like those,
For the mechanic's use I first arose.
When Cain his implements for building plan'd,
I with his labourers went hand in hand;
And form'd his principals both bad and good,
Tho' teeth I have, yet never want for food.
From back to edge I'm made of temper'd steel,
And squares, and circles, form by line and reel;
Your should'ers ease, and set your tenants right,
Delever bones, and carcases unite.

III. ENIGMA

III. ENIGMA (72) by Mr. Thomas Fox, Norton.

Make room, ye enigmatists, learned and wife,
Behold a strange couple wrapt up in disguise;
So nearly related, so like one another,
At first you wou'd take us for sister and brother;
Nor wonder, for we have our parent in common,
But oft'ner brought forth by the man than the woman;
In sable we're cloath'd, and sometimes in scarlet,
When we in conjunction attend on a varlet.
But when we're in mourning we better are known,
From the beggar in rags, to the king on the throne.
How pleasing our aspect, how winning our air,
When brought to perfection, denuded of hair.
We always attend the debates of the nation,
And help ev'ry member to his proper station;
In ev'ry assembly we strive for the lead,
Tho' it must be confess'd we are far from the head.
We daily attend you where-ever you go,
And beg, from these hints, that our names you will shew.

IV. ENIGMA (73) by Autodidactus Raptoniensis.

<p>A sweet bewitching nymph I am, And in my youth was coy, But as I grew up with my mam, I learn'd to smile and toy. In silks and satins I was dress'd, My ears with jewels hung, The blooming rose adorn'd my And music on my tongue. [breast, The swains for some time stood a- bask'd, And knew not what to say, But fir'd with love—rush'd forth at And 'gan with me to play. [last, The patroness of letters deem'd, I was likewise of song; Then princes highly me esteem'd, And forc'd me from the throng. Arabian sweets to me they paid, And rich ore from Peru, A costly table for me spread, With wines both old and new.</p>	<p>To me the deeps yield up their store, Heav'n unto me bows down; In common I disown the poor, Yet yearly kiss each clown. All hail me as a goddess bright, And offer at my shrine; Without me some won't sup at night, Nor can without me dine. At weddings I am look'd on best, And help to heighten glee; There wou'd be neither song nor jest, If it were not for me. But now, ah! sore against my will, I sing a mournful strain; Pale sickness, and a thousands ills, Attack my smiling reign. Next poverty with ghostly rage, On all my steps attends; Th' downfall of empires I presage, And here my being ends.</p>
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V. ENIGMA (74) by W. W. Shipfides, Normanton on the Wolds.

No martial hero from the hostile plains,
With honors loaded your attention claims;
Nor hideous monster, nor fam'd magic elf,
Abruptly dares to introduce himself.
But one more modest begs admittance here,
Your kind attention and paternal care;
For know, dear Gents, I am but young in years,
And childhood's oft oppress'd with boding fears.
And various trials I must undergo,
While subject to the regions here below;
When in embryo ere I had my birth,
Or in this weary world I was brought forth—

The

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The wise and learned just predictions drew,
Foretold my coming, and my merits too;
Tho' young in years, in knowledge I am old,
And hidden mysteries with ease unfold:

And many virtues you in me may find,
That charm the soul, and cultivate the mind;
The lively teint of nature I display,
The depth of winter, and the height of May.

A friend to gen'us, reputation prize,
Instruct the witty, make the simple wise;
To friendship true, sweet balm of all our joys,
And yield to you delight that never cloy:

And so proficient now in arts I'm grown,
The gay and polish'd my perfections own;
While Fame's loud trumpet doth sound abroad my praise,
And crown my brows with unfading bays,

And laurels too, while truth shines in my face,
Which time nor envy never can erase;
And crowds of votaries of high degree,
My favours court, and tribute pay to me.

VI. ENIGMA (75) by Mr. John Carawithen.

Each day upon the road do trudge,
In country and city,

No post-boy is so great a drudge,
There's none m' fate do pity.

My belly they do never fill,
But oft upon my face

Corrupted blood and water spill,
A burthen on me place.

Far greater than a slave could bear,
Or porter with his knot,

Which leaves the traces of despair,
Grief, sorrow, and what not.

Through these assaults I am not yet
Of pleasure quite bereft,

Show Mars at large in Vulcan's net,
Discovers many theft.

I also aid that fiery god,

In all his martial strife,

And am obedient to your nod,

Tho' ne'er rob none of life:

But yet I sometimes my master,
In iron fetters bind:

But that is his own doer,
Declares another mind.

Fashions and fancies I relate,
Aid men in every trade;

Suspicion oftimes I create,
Amongst the cavalcade

My right I further could maintain,

But might my name expose,

Detected it would give me pain,
None would espouse my cause.

VII. ENIGMA (76) by Mr. Jonathan Wood, Schoolmaster, Ruyhton, Northamptonshire.

Ingenius bards who grace Diaria's page,

And with poetic lore delight the age;

Admit a friend whose services you use,

When you disclose the efforts of your muse.

When sits the judge in stately robes array'd,

To try the pending cause he needs my aid;

The lawyer, parson, and physician find,

Exact from me a model of their mind.

I'm artful found, for I with ease can plan,

What may appear impossible to man;

The abstrusest mysteries by me are trac'd,

And what seems vulgar elegantly plac'd.

Perhaps ere this you wish to know my form,

But that I shall reserve, tho' oddly born;

For I'm entirely at my master's whim,

And never heed if I can pleasure him.

But

But if with age, or weariness oppress,
I suffer tortures ne'er to be express;
With piercing steel, and with unfeeling heart,
He oft divides my tender frame apart.

But hold, enough is said, you've found my name,
Long may you live, and by me merit fame.

VIII. ENIGMA (77) *by Mr. Philip Norris, Liverpool.*

Ye learned Gents in Britain's happy nation,
Permit a friend in D1. to crave a station;
Tho' unadorn'd, and clad in mean array,
To fame aspires, and begs you'll point the way.
Lo! this before you—speak—unfold your story,
Behold, kind Gents, I seek the path to glory;
And by your kind indulgence and permission,
Would shew my state, and claim your high decision.
Know ye—I'd being ere great Sol appear'd,
Or ere the vaulted arc of heav'n was rear'd;
And when Jehovah issued the decree,
'Let there be light'—I instant did obey.
On aerial pinions, lo! to earth I fled,
Dispel'd the gloom which o'er her surface spread;
When from the dust my brothers had rescu'd,
And with new lustre all their frame's endu'd.
Since which grand epocha I have explor'd,
Her specious surface—and around her soar'd;
And on each rock, and mountain's craggy steep,
I still remain—as in th' unfathom'd deep.
On desert wastes, where human foot ne'er trod,
I dormant lie, yet sweep the briny flood;
Where burning lava streams in lurid round,
In some dreadful volcano I am found.
Yet still within each dark abyss remain,
And in oblivion sleep upon the plain:
In gloomy caves, unknown to mortal eye,
I still abide, yet touch the vaulted sky.
Where dreadful clangor and destruction reign,
Behold me foremost in each murd'ring train;
Yet coward like I stalk behind the last,
And mix amongst the ranks, and stand aghast.
Full many a hero falls beneath my charge,
A bleeding victim whilst I roam at large;
I fear no mortal—tho' assassin dire,
Since earthly power can't bar my high career.
O'er mighty kings, 'tis said, I potent reign,
Yet deign to crown them, and with them remain;
Nay, I'm so friendly to each royal fair,
I'm known to guard her with a parent's care.
Each haughty tyrant with disdainful scorn,
Me on the ground has oft been seen to spurn;
Yet I regardless of his fierce disdain,
Exulting rife, and skim across the plain.
Such are my feats, and such my mighty power,
Tho' I on all my blessed influence show'r;
The king and plebeian I alike befriend,
And first and last on high and low attend.
Thus, Gents. I'm something—please my form to view,
Yet, ah! I'm nothing when compar'd with you.

IX. PRIZE ENIGMA (78) *by Mr. John Fildes, Schoolmaster.*

In this disguise be pleas'd to introduce,
 A hero bold of matchless worth and use;
 And ancient race too, for before the flood,
 My stately ancestors some ages stood.
 In ev'ry country I may now be found,
 Where learned men and noble arts abound;
 And shall remain in Britain's fruitful isle,
 While trade and commerce on her deign to smile.
 In wealthy cities you may daily see,
 Great numbers wish to be possess'd of me;
 For well they know that howsoe'er they strive,
 Without my aid 'tis difficult to thrive.
 And if to meanness sometimes I descend,
 Both Lords and Commons find in me a friend;
 By all good men I'm ever highly priz'd,
 But by base villains always am despis'd.

Once when Elmira was with grief oppress'd,
 And doubts and fears disturb'd her thoughtful breast;
 When sad suspense she could no longer bear,
 But would have fall'n a victim to despair.
 To her I flew a messenger of joy,
 And soon her tender bosom ceas'd to sigh;
 Suspense I banish'd, and dispel'd her grief,
 Dispers'd her fears, and gave her soul relief.
 'Tis no uncommon thing to find me poor,
 Or like a beggar waiting at each door;
 And yet 'tis strange that I should want support,
 For I have always many friends at court.
 Near me the sick and weary find repose,
 And in sweet sleep awhile forget their woes;
 Among all ranks of men I gain respect,
 Yet have some foes who treat me with neglect,
 And far from shewing me the least regard,
 With rapine all my services reward;
 But oft their folly they have cause to rue,
 For when found out they meet with justice due;
 And as a punishment, like rogues, you'll see,
 They quickly get exalted near to me.
 Tho' dull and stupid, I'm for swiftness fam'd,
 And in dread wars my merits are proclaim'd;
 Strange oppositions, and conjunctions too,
 In public places I expose to view;
 And of astrology, tho' nought you know,
 By me true signs, and wonders, you may show.
 When in the west the circling sun descends,
 And awful night her sable shade extends;
 'Tis then, and then alone, I terror spread,
 And then with reason you my pow'r may dread.
 For tho' by day I'm known to do you good,
 By night beware, lest I should spill your blood;
 Upon this earth where sinful mortals live,
 But few advice can take as well as give;
 For would mankind give heed to what I say,
 And mind my precepts, few would go astray.

The more I'm doom'd the wants of men to bear,
The more I grow a stranger to despair.
And now I think there cannot be much doubt,
But that you've hints enough to find me out;
If not, I can supply you with another,
You pass each day between me and my brother,

NEW REBUSES.

I. REBUS, by Mr. John Youart, Schoolmaster, Glazedale.

A shepherd turn'd into a stone, Goddesses of infants alone; He who was turn'd into a cow, He who did Eteocles out-do; The youth who a cloud did embrace, What brought woe upon human race; A nymph for beauty justly fam'd,	A king in scripture often nam'd, A youth for love fell to despair, Was for rebellion made a star; What's after death all wish to learn, And what's once past doth ne'er re- turn: The initials join will bring to light, A subject in whom I take delight.
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II. REBUS, by Mr. Philip Norris, Liverpool.

An English measure please to quote. Two vowels also place in rote; To these two tigers heads adjoin,	And they will name a friend of mine, Upon whose friendship in deep sci- The Diary may place reliance. [ence,
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III. REBUS, by Mr. Jonathan Wood, Schoolmaster.

Pray name th' glory of Britannia's isle,
Whose noble worth would make the captive smile;
Amount in Thessaly for beauty known,
That there the gods have fix'd their royal throne.
Th' frowns of that beauteous goddess we dread,
The plains appointed for the happy dead;
The initials join immediately you'll view,
A most noble passion that's felt but by few.

IV. REBUS, by Mr. Thomas Fox, Norton, Derbyshire.

When Israel by God's command, From Pharaoh's land did come, An exile in a desert land, Full forty years did roam.	One half thereof when added to, Our gracious sovereign's name, Will x, y, z bring to your view, Endow'd with wit and fame.
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V. REBUS, by Mr. Thomas Edwards, Coventry.

If unto one thousand and one are subjoin'd,
A fifty, and then to the whole we unite,
A weight of a certain description we find,
The name of an author produc'd to our sight.

VI. REBUS, by Mr. John Fildes, Schoolmaster, Liverpool.

Take half of two thirds of seven more than a score,
Next three fifths of five twelfths of just forty and four,
Then two thirds of three fourths of nineteen minus seven,
And one third of three eighths of five plus eleven.
The initials of these if connected will show,
As curious a building as any I know.

NEW CHARADES.

I. CHARADE, by Mr. Philip Norris, Liverpool.

Great men, triumphal, us'd my first of old,
My next in worth exceeds e'en solid gold;
My third is of the feather'd tribe you'll find,
My whole's a bard of most exalted mind.

II. CHARADE, by Mr. Jonathan Wood, Schoolmaster.

My first is the common resort,
Of all in their juvenile years,
Where wantonneſs, paſtime, & ſport,
Prevail if my next diſappears;

My whole may be conſtantly ſeen
If you ſtrictly explore Dia.'s page
My aim and my pleaſure has been
To inſtruct and enliv'n the age.

III. CHARADE, by Mr. W. Shipſides, Normanton on the Woles.

To ſoothe the anguiſh of young Damon's breaſt,
Clariffa kindly gave to him my firſt;
My next, tho' deſtitute of winning charms,
The love-lorn youth oft bribes unto his arms;
For deeds unjuſt too oft, alas! we find,
My whole upon my firſt is oft conſign'd.

IV. CHARADE, by Mr. John Rimmer, Liverpool.

Ah! Myra, hide my firſt, or I,
In painful ecſtaſy muſt die;
He with my next Lucinda
braces,

To give her form more charming
graces;
As ſparkling ſerpents larks entice,
My whole attracts e'en hearts of ice.

V. CHARADE, by Mr. John Carwithen.

My firſt from the Indies is
brought,
My ſecond is hid in a cell,

There's thouſands each year by me
got,
Yet oft eat the houſe where I dwell

VI. CHARADE, by Mr. Thomas Fox, Norton.

My firſt on your finger you plainly may ſee,
My ſecond when Miſs in her airs ſhe ſhall be;
My whole circumscribes the moſt beautiful part,
Of nature compleat, when aſſiſted by art.

VII. CHARADE, by Mr. John Fildes, Schoolmaſter, Liverpool.

My firſt's a term ſome uſe to thoſe they love,
Within each breaſt my next is known to move;
The maid who ſpeaks the feelings of her ſoul,
Will own ſhe ſometimes thinks upon my whole.

I. PARADOX, by Mr. Jonathan Wood, Schoolmaſter.

However myſterious, ye Gents, I appear,
I vow what I ſay to be true;
I'm a word of five ſyllables, from which take one,
And no ſyllable appears to your view.

I. QUERY, by Mr. Jonathan Wood, Schoolmaſter, Ruſhton,
Who would be extremely obliged to the ingenious contributors of this
Diary, for an elucidation of the laſt verſe 9 chap. St. John.

II. QUERY, by Mr. John Carwithen.

Required to know, what is the ſin that is not unto death; and why he
ſaith, we need not pray for the ſin that is unto death. I epiſtle of St.
John, chap. v. verſe 16.

III. QUERY, by Mr. John Fildes, Schoolmaſter.

How are we to underſtand the latter part of 20th verſe v. ch. Judges,
"the ſtars in their courſes fought againſt Sifera."

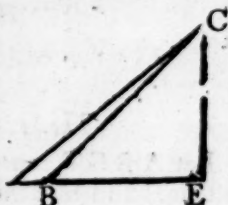
☞ The Prizes have been determined by lot as follow;—For the Prize Queſ-
tion, to Caſia Broomwott, 6 Diaries; and to Mr. J. Brookes, 6 Di-
aries, for anſwering the greateſt number of queſtions; 2d, for the
Prize Enigma, to Amozythum, 6 Diaries; 3d, for the General
Anſwer to the Enigmas, to Mr. John Carwithen, and Juveniensis,
6 Diaries each; 4th, for the General Anſwers to the Rebuses, Cha-
rades, &c. to Mr. Fox, of Norton, 6 Diaries;—all of whom will
pleaſe to ſend for them to Mr. PEARSON, Printer, in Birmingham.

N. B. Queſtions omitted, that ſuit our Plan, will be inſerted in their turn.

ANSWERS to the MATHEMATICAL QUESTIONS.

I. QUESTION (96) answered by Master Wm. Oddie, a Pupil in Mr. Hildes's School, Liverpool.

Const. In any indefinite right line take $AB = 2$ (the given diff. of the two legs) and from B draw BC , making the $\angle ABC = 135^\circ$, and the $\angle CBE = 45^\circ$; also from A draw $AC = 12.8$ (the given hyp.) cutting BC in C , and from C let fall the \perp CE , meeting AB produced in E ; then will AE and CE be the sides required. For since $\angle E = 90^\circ$ and $\angle CBE = 45^\circ$; the $\angle BCE = 45^\circ$ also: and consequent-
 $ly BE = CE$.



Calc. As $AC : s. \angle ABC :: AB : s. \angle ACB = 6^\circ. 20'$; then $6^\circ. 20' + 45^\circ = 51^\circ. 20' = \angle ACE$, and $90^\circ. - 51^\circ. 20' = 38^\circ. 40' = \angle A$. Again, as $Rad. : AC :: s. \angle A : CE = 8$ nearly, $\therefore 8 \div 2 = 10 = AE$. Lastly $\frac{AE+CE}{2} = 4$ of square chains, or 4 acres, the required area.

The same by Master John Rowbottom, West Hallam, Derbyshire.

If AE and CE be the two legs of the Δ , it will be by Trig. as hyp. AC (12.8 cha.) : $AE - CE$ (2 cha.) : : $s. \frac{A+C}{2} (45^\circ) : s. \frac{C-A}{2} = 1104854 = 6^\circ. 20'. 35''$. (see last Fig.) then $45^\circ. \pm 6^\circ. 20'. 35'' = 51^\circ. 20'. 35''$. and $38^\circ. 39'. 25''$. the two acute L 's; and, as $rad. : s. \angle A :: AC : CE = 8$ cha. then $AE = 10$ cha. and the area 4 acres very near.

Solutions to this Question were also given by Messrs. Ashton, Mercurius, Travis, Woollen, Stevenson, Youart, Gregory, sen. Eaton, Saunderson, Brown, Saul, Whiting, Marlden, Elliot, Buckley, Mabbot, Brookes, and Sadler.

II. QUESTION (97) answered by Casia Broomwott.

Const. Make a square $ABCD$ $= \frac{3}{4}$ of the given area; produce B AD till $AF : AD :: 7 : 3$; make $FG \parallel$ and equal AB , join CG and $ABGF$ will represent the garden. For $AF : AB (AD) :: 7 : 3$; but $AD^2 = \frac{3}{4}$ of the given area by constr. hence $AB \cdot AF = AD \cdot AF = AD \cdot \frac{7}{3} AD = \frac{7}{3} AD^2$ the given area; and $AF : AB :: 7 : 3$ the given ratio. Again, Take $KF : AF :: 3 : 7$; draw $KI \parallel GF$, from F draw FP bisecting



secting K I in O, then will F P be the required walk. For \square K G = \triangle F G P and $\Delta K = \Delta F - K F = \frac{7}{3} K F - K F = \frac{4}{3} K F$; hence as $\Delta B = G F$, we have $\square \Delta I : \square G K :: \Delta K : K F :: \frac{4}{3} K F : K F :: 4 : 3$. Q. E. D.

Cal. By constr. $\Delta D = \sqrt{\frac{2}{3} 9680} = 44 \sqrt{\frac{1}{3}}$, and $\Delta F = \frac{308}{3} \sqrt{\frac{1}{3}}$; also $\Delta K = 44 \sqrt{\frac{1}{3}}$ by const. hence $\sqrt{2 K F^2 + \Delta D^2} = P F = 220 \sqrt{\frac{1}{3}} = 144.0238$ yards, the length of the walk required.

The same by Mr. John Brookes, of Leeds.

Let A B G F represent the garden and F P the walk (see the last fig.) and by similar figures, $7 \times 3 : 7^2 :: 9686$ yards, the area of the garden : $\sqrt{\frac{9680 \times 7}{3}} = 150.2886$ yards = ΔF , or B G.

—Also $7 : 3 :: 9680 : 4148.5714$ = the area of the \triangle cut off by the walk, which being divided by $\frac{1}{2} G F$ gives $G P = 128.8188$.—Now by Euc. 47.1. $F P = 144.0238$, the length of the walk required.

Solutions to this Question were also given by Messrs. Rowbottom, Ashton, Woollen, Mercurius, Travis, Varley, Stevenson, Youart, Eaton, Saunderfon, Saul, Whiting, Elliot, Bruckley, Buckley, Mabbot, and Sadler.

III. QUESTION (98) *ans. by Mr. Richard Elliott, Liverpool.*

Put m = meridional parts of 40° , c = cosine of the course to radius 1, a = .00029088, &c. the length of an arc of one minute, and x = arc of Lat. come to; then $3438 x$ = Lat. in minutes, $2400 - 3438 x$ = diff. of Latitude; and by Mercator's sailing, $c : 2400 - 3438 x :: 1 : \frac{2400 - 3438 x}{c}$ = distance sailed, which by the quest. is equal to meridional diff. of Lat.—Now Dr. Halley's series for x is $\frac{1}{a} \times x + \frac{1}{2} x^3 + \frac{1}{24} x^5 + \frac{61}{3040} x^7$, &c. the meridional parts for the Lat. arrived in, therefore $m - \frac{1}{a} \times x + \frac{1}{2} x^3 + \frac{1}{24} x^5$, &c. = $\frac{2400 - 3438 x}{c}$, which by proper reduction, &c. is reduced to 697.054 , &c. $\times x - 572.957 x^3 - 143.24 x^5$, &c. = $2886 - m = 263$, or $x - .82191 x^3 - .20547 x^5 - .05968 x^7$, &c. = $.37727 (n)$; then by reverting the series, $x = n - .82191 n^3 + 3 \times .82191^2 n^5 - .20547 \times n^7$, &c. = $.454863$ by summing a few of the terms. Hence the Lat. = $26^\circ. 4'$ nearly, and Longitude = $31^\circ. 10'$.

The same by Mr. Jonathan Mabbott, Oldham, Lancashire.

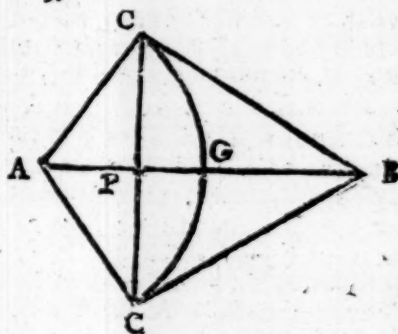
By the principles of sailing, radius : cosine of course :: distance

For \square tance failed: proper diff. of Lat. but by the question the dif-
 $F = \frac{1}{2}$ tance failed is equal to the meridional diff. of Lat. Put $c =$
 $: A K$ cosine of the course, $r = \text{rad.}$ $M = \text{meridional diff. of Lat.}$ D
 $= \frac{308}{3}$ = proper diff. of Lat. then $\frac{r}{c} = \frac{M}{D}$, i. e. $\frac{10.000000}{8.314696} = \frac{M}{D}$: by the
 $D^2 =$ help of which, and a table of meridional parts, and a few trials,
I find the Lat. arrived in = $26^\circ. 41'. N.$ nearly.

Solutions to this Question were also given by Messrs. Ashton, Eaton, Saul, Whiting, Elliott, Brookes, and Fildes.

IV. QUESTION (99) answered by Mr. William Eaton, Jun. Sutton o'th' Hill, Derbyshire.

Put $PC = x$, $AC = y$, $AP = 35 = d$, $PB = 80 = c$, and $AP + PB = 115 = a$; then will $xa =$ the area of $ACBCA$, and $dx =$ the area of ACA , and by a known theorem



$\frac{2\frac{1}{2}y^2 - 1\frac{1}{2}yd - d^2}{1\frac{1}{2}y + d} \times x =$ the area of the segment CGC , and per question, $\frac{2\frac{1}{2}y^2 - 1\frac{1}{2}yd - d^2}{1\frac{1}{2}y + d} \times x + dx = \frac{2}{3}ax$, therefore

$\frac{2\frac{1}{2}y^2 - 1\frac{1}{2}yd - d^2}{1\frac{1}{2}y + d} = 2a \div 3 - d$, which call (b) then will $2\frac{1}{2}y^2 - 1\frac{1}{2}yd - d^2 = 1\frac{1}{2}by + bd$, consequently $y^2 - 1\frac{1}{2}yd - 1\frac{1}{2}by \div 2\frac{1}{2} = \frac{d^2 + bd}{2\frac{1}{2}}$; assume $\frac{1\frac{1}{2}d + 1\frac{1}{2}b}{2\frac{1}{2}} = 2n$, and $\frac{d^2 + bd}{2\frac{1}{2}} = m$, then will $y^2 - 2ny = m \therefore y = 64.59 = AC$, then CB are easily found 96.67 . W. W. R.

The same answered by Mercurius.

Put $AP + PB = 115 = e = AB$; $AP = 35 = a$; $7854 = c$; and $AC = x$ (see the preceding figure) then $CP = \sqrt{x^2 - a^2}$; and per Emerson's Trig. pa. 89, 1st ed. $x + \frac{a}{2} : 86 :: \sqrt{x^2 - a^2} : \text{the degrees in the } \angle CAG = 86 \sqrt{x^2 - a^2} \div \frac{2x + a}{2}$; But $360 \text{ degrees} : 86 \sqrt{x^2 - a^2} \div x + \frac{a}{2} :: \text{area}$

of the circle $4cx^2 : \frac{4 \times 86x^2c \times 2\sqrt{x^2 - a^2}}{360 \times 2x + a}$ the area of the sector $ACG = \frac{2}{3}e \times \frac{1}{2}\sqrt{x^2 - a^2}$ per question: this equation reduced, &c. and in numbers $x^2 - \frac{15e}{430}x = \frac{15ae}{86c}$, this quadratic

C

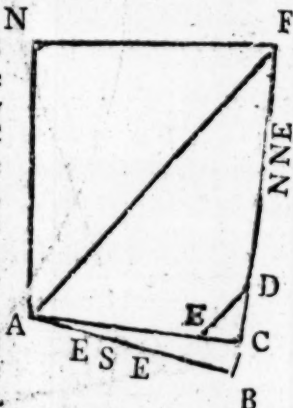
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equa. solved gives $x = 64^{\circ} 859 = A C$: then we find $CB = 96^{\circ} 859$ as required.

Solutions to this Question were also given by Mr. John Rowbottom, Mr. Ashton, the proposer, Mr. Travis, Mr. Stevenson, Mr. Saul, Mr. Whiting, Mr. Elliott, Mr. Mabbot, and Mr. Brookes.

V. QUESTION (100) answered by Master William Walker, a Pupil in Mr. Fildes's School, Liverpool.

Const. From any point A in the N meridian AN draw an ESE line AB = 26 the given distance between the two ships A and B, and \perp thereto draw a NNE line BF, in which take BC = 5, the distance the ship B sails before the ship A starts, and join A and C. Next from C take CD = 5 in the same line BF, and from D draw DE = 6, cutting AC in E; then from A draw AF \parallel to DE, cutting BF in F. Lastly, from F let fall the \perp FN upon the meridian AN: then will AF be the distance the ship A must sail, the \angle FAN her course, and F the point at which she will overtake B. For the Δ 's ACF and ECD being similar, $CF : AF :: CD : DE :: 5 : 6$.



Calc. As $AB = 26$: Rad. :: BC : tang. $\angle BAC = 10^{\circ} 53'$; whence the $\angle ACB = 79^{\circ} 7'$, and the $\angle DCE = 100^{\circ} 53'$. Also, $DE = 6$: s. $\angle DCE = 100^{\circ} 53'$:: $CD = 5$: s. $\angle CED = 54^{\circ} 55' = \angle CAF$, whence the $\angle CDE = 24^{\circ} 12' = \angle AFC$, and the course $GAF = \angle GAB$ (10 points, or $112^{\circ} 30'$) $- \angle BAF$ ($\angle BAC + \angle CAF$) = $N 46^{\circ} 42' E$. Next, $AC = \sqrt{AB^2 + BC^2} = 26.47$. Then, as s. $\angle AFC = 24^{\circ} 12'$: $AC = 26.47$:: s. $\angle ACF = 100^{\circ} 53'$: the dist. $AF = 63.41$ miles. Again, as Rad.: 63.41 m.: : cos. course $46^{\circ} 42'$: diff. lat. = $43^{\circ} 49' N$. which added to $53^{\circ} 30'$ the lat. sailed from, gives $54^{\circ} 13'$ for the lat. come to. Lastly, as Rad.: merid. diff. lat. = 72.9 :: tang. course = $46^{\circ} 42'$: diff. long. 77.3 m. E. which taken from $2^{\circ} 49' W$. the long. left, leaves $1^{\circ} 28' W$. the long. arrived at.

N.B. That part of the fig. belonging to the last operation, are omitted; for if the merid. diff. lat. were to be taken in the meridian AN continued, and a \perp drawn to represent the diff. long. meeting AF continued; the fig. would be either very large, or the lines CD and DE almost imperceptible.

The same answered by Mr. J. Brookes, of Leeds.

Let A be the place of the western ship, and B that of the eastern (see the preceding fig.) whose bearing are E. S. E. and W. N. W. (not W. S. W. as mentioned in the question); then if the ship B sail N. N. E. it is plain that she sets off at right angles to A B: hence then, if $AB = a$; 5 miles $= b$; $BF = b + 5x$ and $AF = 6x$, by the nature of the question $36x^2 = 25x^2 + 10bx + b^2 + a^2$: which equation being properly reduced, gives $x = \frac{50 + \sqrt{11a^2 + 36b^2}}{11} = 10.573$; therefore

$AF = 63.438$, and $BF = 57.865$, and per fig. the angles $BAF = 65^\circ.43'$; hence by subtraction only the $\angle FAN$ is found $= 46^\circ.42'$: therefore the course is N. E. $1^\circ.42'$ E.

Now in the $\triangle ANF$ all the \angle 's and side AF are given to find $AN =$ the diff. of latitude $= 43.5$ miles, and NF the departure $= 46$ miles; therefore the latitude arrived at is $54^\circ.13\frac{1}{2}'$; also the proper difference of latitude $= 43\frac{1}{2}'$: meridional difference of latitude 74 : departure 46 : $1^\circ.18'$. the difference of longitude; therefore $2^\circ.45' - 1^\circ.18' = 1^\circ.27'$. the required longitude.

Mr. Ashton, Mr. Eaton, Jun. Mr. Youart, Mr. Saul, Mr. Whiting, Mr. Elliott, and Mabbot, also gave answers to this Question.

VI. QUESTION (101) answered by Cassia Broomwolt.

GENERAL SOLUTION.

Take the sum of the indices three, two and one, Have for its numerators each index alone; Each fraction thus form'd, multiply by the sum; Then from these proportions the answer will come, One price: one gallon:: each product: a fourth, Proportion's the number of gallons he bought.

NOTE, the initials answers the Prize Enigma.

Thus $\frac{3}{3+2+1}, \frac{2}{3+2+1}, \frac{1}{3+2+1} \times 7200s. = 3600, 2400, 1200s.$
 $\begin{matrix} s. & Gall. & s. \\ \text{then as} & 5 & : & 1 & :: & 3600 & : & 720 & \text{gall. of claret.} \\ & 6 & : & 1 & :: & 2400 & : & 400 & \text{sherry.} \\ & 8 & : & 1 & :: & 1200 & : & 150 & \text{canary.} \end{matrix}$

The same answered by Mr. James Stevenson, the proposer.

Put $x =$ the number of gallons of claret, $y =$ those of sherry, and $z =$ those of canary, then by the quest. $x^3 y^2 z = a$ max. and $5x + 6y + 8z = (360 \times 20) a$; hence $z = \frac{a - 5x - 6y}{8}$, by substituting this in the max. we obtain

$\frac{ax^3 y^2 - 5x^4 y^2 - 6x^3 y^3}{8} = a$ max. in Fluxions, first making y constant

constant, &c. $3ay^2x^2\dot{x} - 20y^2x^3\dot{x} - 18y^3x^2\dot{x} = 0 = 3a - 20x - 18y$; and $2ax^3y\dot{y} - 10x^4y\dot{y} - 18x^3y^2\dot{y} = 0 = a - 5x - 9y$; which equations solved give $x = 720$, and $y = 400$; consequently $z = 150$. W. W. R.

True Solutions were also given by Messrs. Travis, Mercurius, Wool-len, Youart, Eaton, Jun. Saul, Whiting, Elliott, Mabbot, and Brookes.—Other answers were sent, but not right.

VII. QUESTION (102) answered by Mr. Olinthus Gregory, the Proposer.

By Simpson's Fluxions, Vol. I. 1. pa. 22, the greatest cone will be when the slant side is to the diameter of the base, as 3 : 2. Therefore if $3x$ denote the slant height, $2x$ the diameter of the base, $3 \cdot 141593 = a$, and the whole surface $= c$; we shall have the following equation $\frac{2x \times a \times 2x}{4} + \frac{2x \times a \times 3x}{2} = c$,

or $ax^2 + 3ax^2 = 4ax^2 = c$, consequently $x = \sqrt{\frac{c}{4a}} = 6$: hence the slant height is 18, and the diameter of the base 12, from which the perpendicular is found $16 \cdot 070556$ inches. It is shewn by the writers on fluids, that

$\frac{\text{base} \times \text{altitude}}{\text{apert.} \sqrt{32 \frac{1}{8}}} \times \frac{16}{15}$ is the time in seconds of emptying a cone at the base, this in the present case is $\frac{113 \cdot 007348 \sqrt{16 \cdot 970556}}{1 \times \sqrt{386}} \times \frac{16}{15} = 25 \cdot 29493$ seconds, as required.

The same answered by Mr. William Travis, of Shaw, near Rochdale, Lancashire.

Put x = diameter of the base, v = slant height, $c = 3 \cdot 1416$, $b = 452 \cdot 38939$; then per Emerson's Fluxions, page 173, $x = \sqrt{\frac{b}{c}} = 12$; $v = \frac{3}{2} \sqrt{\frac{b}{c}} = 18$, and perpendicular height $= \sqrt{\frac{2b}{c}} = 16 \cdot 97056$. Then, per Hutton's Mathematical Miscel-

lany, art. 1st, $\frac{4b \sqrt[4]{\frac{2b}{c}}}{15 \sqrt{386}} = 25 \cdot 295$ the time required.

Otherwise, by Mr. James Ashton, of Harrington.

Put $a = 3 \cdot 1416$, $\frac{a}{4} = b = 7854$, s = the given surface, and x = the diam. then ax = the circumference, and bx^2 = the area of the base, also $2s - 2bx^2$ = twice the convex surface; whence

whence $\frac{2s-2bx^2}{as}$ = the flant height; (as $x^2 = 16b^2$) $\frac{\sqrt{4s^2-8bsx^2}}{ax}$
 = the perpen. altitude; then will $\frac{bx\sqrt{4s^2-8bsx^2}}{3a}$ = the soli-
 dity, = a maximum; or $sx^2 - 2bx^4$ = a max. and $2xx -$
 $8bx^3 = 0$; then $x = \sqrt{\frac{s}{4b}} = 12$, the diameter. Now, as
 the solidity is a max. it will be $1 : \sqrt{2} :: 12 : 16.97056$ =
 perp. altitude; the flant height = 18; area of the bale =
 113.0976 ; and solidity = 639.776 cubic inches. Then, by
 Hutton's Exhaustions, cor. 3d, pa. 8, putting a = the alti-
 b = area of the bottom; $n = 1$ inch, $m = 32\frac{1}{2}$ feet = 386
 inches, then $\frac{16b\sqrt{a}}{15n\sqrt{m}} = 25.3$ seconds.

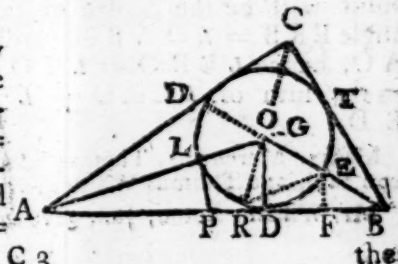
Or thus, by Mercurius.

First put $a = 452.389392$; $c = .7854$; x = the diameter
 of the cone; and y = the perpendicular; then the solidity is
 $= x^2 \times y \times \frac{c}{3}$ = a maximum per quest. or $x^2 y$ = a max.
 Again per Euc. 47. 1. the flant height of the cone =
 $\sqrt{\frac{x^2}{4} + y^2}$; and the whole surface is $x^2 c + 2cx\sqrt{\frac{x^2}{4} + y^2}$
 $= a \therefore x^2 = \frac{a^2}{4c^2 y^2 + 2ac}$, which substi. in the max. above, and
 $\frac{a^2 y}{4c^2 y^2 + 2ac}$ = a max. fluxed and reduced $y = \sqrt{\frac{a}{2c}} = 17$;
 whence $x = 12$. Secondly, put $a = 17$; $n = 1$, the area of
 the aperture; and $m = 32\frac{1}{2}$ feet = 386 inches, then per Dr.
 Hutton's Miscellanea Mathematica, prob. 2d. cor. 3d. the
 time = $\frac{16b\sqrt{a}}{15n\sqrt{m}} = 25.317$ seconds, required.

Messrs. James Stevenson, Joseph Saul, Thomas Whiting, Richard
 Elliott, Jonathan Mabbot, and John Brookes, also gave ingenious an-
 swers.—Other answers received, were not right.

VIII. QUESTION (103) answered by Mr. J. Brookes, Leeds

Make the angle BAC = one
 of those given, which bisect by
 the line AO; take AL of the
 given length, and demit the per-
 pendicular LP; make PD =
 PL, and erect the perpendicular
 DO, meeting AL produced
 in O; make the angle DOB =



the compliment of half of another of the given angles, upon the center O with radius O D describe a circle; draw A C, B C to touch the circle, and A B C will be the triangle sought. The demonstration is too evident to need an illustration.

Same answered by Master John Rowbottom, West Hallam.

Constr. From any point B (see Mr. Brookes's Fig. and the additional dotted lines) in the indefinite line A B, draw B D, making the $\angle D B A =$ half the given \angle at the base; make $B E =$ the given distance, and let fall the $\perp E F$; make E O, a fourth proportional to B E — E F, E F, and B E, and draw O D \parallel to E F; make the $\angle A O D =$ the comp. of half the other \angle at the base; from A, and B, draw A C, and B C; making the \angle 's C B D = O B D, and C A O = O A D: then will A C B be the Δ required.

Demonstration. The \angle 's C A B, C B A, are equal the given \angle 's at the base by construction; and A O, B O, bisects them \therefore O is the center of the inscribed circle; and by similar triangles, B E : E F :: B O : O B: hence, as B E — E F : E F :: B O — O D : O D, the radius of the circle by construction. Q. E. D.

Or thus, by Mr. James Ashton, of Harrington.

Constr. Construct the given $\angle B$, and bisect it with the given distance B E (see the preceding fig.) at the point E make an $\angle B E R =$ the supplement of $\frac{\angle A + \angle B}{2}$: draw E R to meet B F continued in R; at R make an $\angle E R C = \frac{\angle A + \angle C}{2}$, draw R C, to meet B T continued in C, and B E continued, will meet R C in the center O, of the inscribed circle; then the $\angle O C A$ being made = $\angle O C B$; and C A drawn to meet B R continued, will complete the $\Delta A B C$ required.

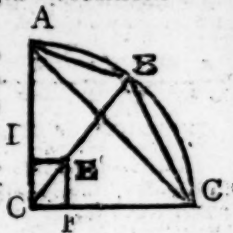
Demonstration. By prop. 35th, book 2d. Emerson's Geom. three lines, bisecting the three \angle 's all meet in one point; and by cor. 1st of the same prop. that point will be the centre of the inscribed circle. Now the angle E R B = $\angle O A B$ by construction; therefore E R is \parallel to A O, hence $\angle E R O = \angle C O G$; but the external $\angle C O G =$ the sum of $\angle C A O + \angle A C O$; therefore, &c. Q. E. D.

Messrs. Mercurius, Thomas Edward Shandy, William Travis, Joseph Saul, and Thomas Whiting, also gave ingenious constructions.

Mr. William Eaton, Jun. gave an algebraic answer.

IX. QUESTION (104) answered by Casia Broomwott.

Construction. By Simpson's alg. prob. 26, page 340, divide the given $\angle AOC$ into two such parts that the lines EF , DE may be to each other as 4 : 3 ; with the given rad. and I cent. O describe the quadrant ABC , produce OE to B , which will be the position of the point required.

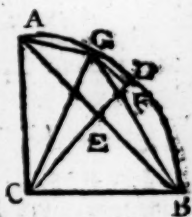


Calculation. Join AB , BC , then will ABC be the Δ . For $FE : DE :: 4 : 3$, and $FE^2 : DE^2 :: 16 : 9$, but $FE^2 + DE^2 = \text{rad.}^2$ ($OE^2 = 1$) that is $FE^2 + \frac{9}{16} FE^2 = \frac{25}{16} FE^2 = 1^2$; hence $FE = \frac{4}{5}$, and $DE = \frac{3}{5}$, the lines of the L 's BOC , and BOD ; then by trig. $BC = \sqrt{2CO^2 - 2CO^2 \cdot \frac{3}{5}}$ (for $\frac{3}{5} = \cos. \angle BOC$) $= 2CO \sqrt{\frac{7}{5}}$, and $AB = CO \sqrt{\frac{13}{5}}$;

also $\angle ACB = \frac{1}{2} \angle AOB =$ by trig. $\sqrt{\frac{1}{10}}$. Hence $AC \cdot BC \cdot \frac{1}{2} \sin \angle ACB = 2CO \sqrt{\frac{7}{5}} \cdot CO \sqrt{2} \cdot \frac{1}{2} \sqrt{\frac{1}{10}} = \frac{1}{3} CO^2 = 154880$ yards the given area. W. W. R.

The same answered by Master James Bushell, a Pupil in Mr. Fildes's School.

With the center C , and the radius $AC = 40$ chains ($\frac{1}{2}$ a mile) describe the quadrant $CABC$, also draw AB , and \perp thereto draw CD , cutting AB in E , and the arc of the quadrant in D ; then will $AE = BE = CE$. Next, $\sqrt{AC^2 + BC^2} = 56.508 = AB$, $\therefore 320$ square chains (the area of the required Δ) $\div BE$ ($\frac{1}{2} AB$) $= 11.313$ the \perp which lay off from E to F in the line ED , then draw $FG \parallel$ to AB cutting the arc in G , also draw AG , BG , and CG , and the point G will be the required vertex of the Δ ; to find the position of which say, as $CG = 40 : \text{rad.} :: CF (CE + EF) = 39.597 : \cos. \angle DCG = 8^\circ.14'$ the measure of the arc DG ; consequently the arc $BG = 53^\circ.14'$ and the arc $AG = 36^\circ.46'$.



Or thus, by Master John Rowbottom, West Hallam.

$OABC$ is the given quad. (see fig. to Casia Broomwott soln.) ABC the required Δ , call $OC = 880$ yards $= r$; given area of the $\Delta = 154880$ yards $= a$; sine of the $\angle BOC = x$; then $\sqrt{1-x^2} = \cos. \angle BOC$ which is well known $= \sin \angle AOB$. Now $\frac{r^2 x}{2} = \text{area of the } \Delta BOC$, and $\frac{r^2}{2} \sqrt{1-x^2} = \text{that of } \Delta BOA$; hence $\frac{r^2 x}{2} + \frac{r^2}{2} \sqrt{1-x^2} = \frac{r^2}{2} + a$; reduced is

$x^2 - \frac{2a}{r^2} + 1 \cdot x = \frac{1}{4} - \frac{a}{r^2} - \frac{a^2}{r^4}$ solved by quadratics $x = \frac{1}{2} + \frac{a}{r^2} \pm \sqrt{\frac{1}{4} - \frac{a}{r^2} - 1 + \frac{a}{r^2}}$, in numbers $x = \frac{1}{2} + \frac{1}{3} \pm \frac{1}{10} = \frac{4}{3}$ or $\frac{2}{3}$; hence the arc $BC = 815.8629$, the position required.

Solutions to this ques. were also given by Messrs. Joseph Waters the proposer, James Ashton, Mercurius, William Travis, James Stevenson, William Eaton, Joseph Saul, Thomas Whiting, Richard Elliot, and John Brookes.

X. QUESTION (105) answered by Mr. John Brookes, Leeds.

Construction. Draw AB the given tangent, and thereon describe the segment of a circle to contain an angle equal to that which the lines AC, BC given in position are to include; and apply CD, \perp to AB , the thing will be done.

Remark. The question will be impossible when CD is too great to stand in the segment ABC .

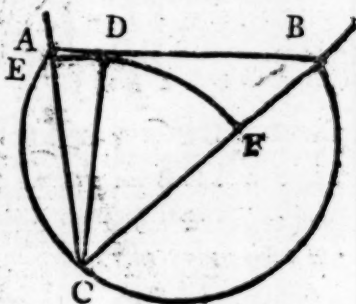
And nearly thus is the answer given by Mr. William Travis, and Mr. J. Saul.

Otherwise, by Mr. James Ashton, Harrington.

Let EFC be the given sector (see the preceding fig.) and ADB the given tangent. Put $a =$ the radius $CE = CD$, $b =$ the tangent ADB , $t =$ the nat. tang. of the given $\angle C$, or arc EDF , and $x =$ the nat. tang. of the arc ED ; then, by prop. 9th, book 1st, Emerson's trig. $1 + tx : 1 :: t - x : \frac{t-x}{1+tx} = \tan.$ of the arc FD ; then because CD is \perp to AB , $1 : a :: x : ax = AD$; and $1 : a :: \frac{t-x}{1+tx} : \frac{2a-tx}{1+tx} = DB$; hence $\frac{at-tx}{1+tx} + ax = b \therefore atx^2 - btx = b - at$; or $x^2 - cx = -d$ (by putting $-\frac{b}{a} = -c$ and $-\frac{b-at}{at} = -d$); and $x = \frac{c}{2} = \sqrt{\frac{c^2}{4} - d}$; then one of the roots of this equa. is the tang. of the arc FD , the other of the arc ED .

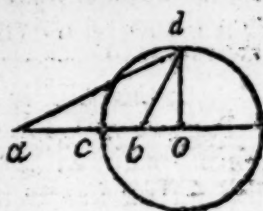
Mr. Whiting also gave an algebr. answer.

XI. QUES-



XI. QUESTION (106) answered by Mr. Brookes.

On any radius of a circle oc produced, take $oa : oc$ in the given ratio of the sides, and $bc : ca$ in the same ratio; erect the radius od perpendicular to oc ; join ad, bd and the triangle abd will be similar to the required one.—For by the Lemma, page 336, Simpson's Algebra, the sides ad, bd are in the given ratio of $ac : bc$; and the area will evidently be a maximum, when the sides ad, bd are drawn to meet the vertical radius in d , the vertex of the circle. Therefore in the given circle inscribe the triangle ABC , similar to abd , A and the thing will be done.

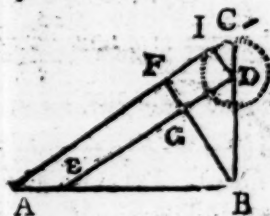


Remark. This ques. was published in the Ladies' Diary for 1780, and a false solution given in 1781; and a true one in 1782, both in L. D. and Carnan's L. D.—Therefore I suppose Honeftienfis has an improved solution to it, otherwise it would not have been republished.

Mr. Eaton, jun. also gave an algeb. answer. Other solutions were received, but not right.

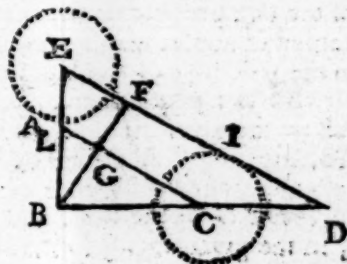
XII. QUESTION (107) answered by Mr. Brookes.

Take AB equal the longer of the given legs, and perpendicular thereto draw BD equal the other; with center D and the given difference of the perpendiculars as radius describe a circle: From A draw AC to touch the circle in I , and draw DE parallel thereto, produce BD to meet AC in C , and ABC, EBD , will be the triangles required.—For if the perpendiculars BF, DI , be demitted, GF is equal DI , because AC, ED are parallel; and the rest is evident from the construction.



The same answered by Mr. Joseph Saul, Rochdale.

Make BE perpendicular to BC , and respectively equal to the given sides; with the radius equal the given difference of the perpendiculars, and centers E , and C , and describe two circles; then draw two tangents AC, ED , to touch the circles E, C in A and I ; so will BCI, BED be the triangles required.



The

The demonstration is evident from the construction: For if BF be drawn at right angles to ED, will also be the same to AC; and the part intercepted between them, that is GF, is equal to the radius of each circle.

Otherwise, by Mr. Thomas Glanvill, of Lambeth.

Put $a = AC$, $b = GE$, $C = DH$, all of which are given; also $x = CE$, and $n = \text{nat.}$ fine $\angle A$, radius = 1. Then, $1 : a :: n : na = BC$; and, $1 : a + x :: n : na + xn = DE$

$\therefore nx = DH = C$; also, $\sqrt{a+x}^2 + b^2 = AG$.

Hence $1 : \sqrt{a+x}^2 + b^2 :: n : b$. By multiplying means and extremes — $n\sqrt{a+x}^2 + b^2 = b$, and from above $nx = c$, these equations reduced will give the values of x and n , as required.

Or Thus, by Mr. James Ashton, of Harrington.

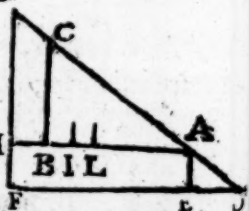
Put $a =$ the shorter leg of the less triangle, $b =$ the longer leg of the greater, $d =$ the given diff. of the perpendiculars, and $x =$ the shorter leg of the greater triangle; $\sqrt{b^2 + x^2} =$ the hypotenuse of the greater, $bx =$ double its area, and $\frac{bx}{\sqrt{b^2 + x^2}} =$ its perp. : but, as the triangles are similar, we have, as x : $\frac{bx}{\sqrt{b^2 + x^2}} :: a : \frac{ab}{\sqrt{b^2 + x^2}} =$ the perpendicular of the less triangle; whence their diff. = d , that is $\frac{bx - ab}{\sqrt{b^2 - x^2}} = d$; and $b^2 - a^2 \cdot x^2 - 2ab^2x = b^2d^2 - a^2b^2$.

Exam. Let $a = 3$, $b = 8$, $d = 2\frac{2}{3} \therefore x^2 - \frac{600}{91}x = -\frac{324}{91}$; $x = \frac{546}{91} = 6$.

Mercurius gave a geometrical answer; and Mr. William Travis, Mr. William Eaton, jun. algeb. ones.

XIII. QUESTION (108) answered by Mr. Brookes.

Take the square of the given line from G the given magnitude. On AB, the sum of the two proportionals, construct a right angled triangle, whose area shall be equal to the rectangle of the said proportionals, viz. B LA : perpendicular to AB, draw H AE = the given line, and ED parallel to AB, meeting CA produced in D; to the first-mentioned difference add the area DEA, and make the triangle DFG = the sum, and produce AB to H; divide HA in I, in the given ratio, so shall HL and IA be the required lines.



The

The answer by Mr. Joseph Saul, Rochdale,

On any line AH , take AL to LB in the given ratio (see the preceding fig.) on AB construct a rectangled triangle ABC , equal the rectangle $AL \cdot LB$: Draw $AE \parallel CB$, and equal the given line; also, draw $FE \parallel AH$, meeting CA produced in D . Make the right angled triangle $DFG =$ the given area $+ \Delta DEA - \square EA$, and divide AH in I , in the given ratio of AL to LB ; so will AI and IH be the lines required.

Demon. The ΔAHG is similar to ΔABC , then $AI : IH :: AL : LB$: the $\Delta ABC = AL \cdot LB$: $\Delta AHG = AI \cdot IH$; and if to the rectangle $AI \cdot IH$, the parallelogram $HAEF$, and the square of AE be added, and the ΔAED be taken away, there will remain the completed rectangle, or given magnitude.

Algebraically by Mr. James Ashton, of Harrington.

Let the given ratio be as 3 to 4, and $x =$ the shorter line, $b =$ the given line to be added to each, and $a =$ the given magnitude: then $3 : x :: 4 : \frac{4x}{3} =$ the longer line; $\frac{4x}{3} + b = \frac{4x+3b}{3}$, hence $\frac{4x+3b}{3} \times \frac{4x}{3} = a \therefore x^2 + \frac{7b}{4}x = \frac{3a-3b^2}{4}$.

And thus nearly is the answer given by Mr. James Stevenson; Mess. Harrison, Mercurius, Richards, Apollo, Spendthrift, and Broadtime, gave elegant algeb. answers.

XIV. QUESTION (109) answered by Mr. T. Glanvill, of Lambeth.

By experiment, the length of an organ pipe, founding D , two octaves below D , in the middle of the open diapason, was found 21.6 inches, and its diameter 1.9 inch; then the ratio of D to C (or an 8th + 7th) being $5 : 18$ or $\frac{5}{18}$, and of D to A (or 2 8ths + 5th) = .775 the breadth of a pulse, or wave of air of each string founding C and B respectively.

To find the distance of time between each beat,

Let $N = 232.96$ the vibration of C ; $\frac{N}{m} = \frac{3}{5}$ the ratio of a 6th.

$\frac{1}{m} = \frac{1}{5}$ of a comma; then $\frac{161p+q}{2q} + \frac{1''}{mN} = .346$ parts of a second, the distance of time between each beat, and also the length of a period of the least imperfections.

To find the length of a cycle of the pulses,

If $AB : ab :: 403 : 402$, the interval of these seconds, is $\frac{1}{3}$ of a comma nearly; and the vibrations of imperfect 6ths being $5AB$, and $5 \times 3ab$; then, as $15AB : 15ab :: 403 : 402$, whence $402 \times 15AB = 403 \times 15ab = 2430090$, the length of a cycle of pulses. Lastly, the cycles and periods of pulses are nearly the same length, whether the temperaments be sharp or flat. Smith's Harmonics, p. 106.

XV. QUES.

XV. QUESTION (110) answered by Mr. Brookes, of Leeds.

In the 22d art. of Dr. Hutton's Mathematical Miscellany, the late ingenious Mr. William Wilkin has shown that the sum of the infinite series $\frac{x}{1.4} + \frac{x}{2.5} + \frac{x}{3.6} + \frac{x}{4.7}$, &c. ad infinitum $= \frac{11x}{18}$; also it is evident that the second series is the unciæ, co-efficients for the binomial theorem, and therefore if n be an affirmative integer the series will terminate.—Suppose $n =$ then $1 + n + n \cdot \frac{n-1}{2}$, &c. $= 1 + 6 + 15 + 20 + 15 + 6 + 1 = 64$. Therefore $\frac{11x}{18} = 64$, and $x = 104 \frac{2}{3}$.—After the same manner the sum of any other number of terms may be found.

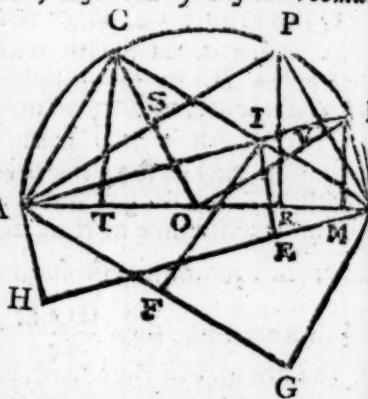
The same answered by Master John Rowbottom.

The sum of the infinite series is $\frac{11x}{18}$, and the sum of the terms of the other series is evidently $= 2^n - 1 =$ by the quadratic $\frac{11x}{18}$; hence $x = \frac{18 \cdot 2^n - 18}{11}$.

This ques. was ingeniously answered by Mr. Jonathan Mabbott, Oldham, Lancashire.

XVI. or Prize QUESTION (111) answered by Cassia Broomwood.

Demon. Let ACPB be the semicircle, O the cent, AP, PB the two parts; bisect AP, PB in C and D; and draw the lines as in the last year's fig. Let fall the \perp 's CT, PR and DM, upon the diam. AB, join PB, PA, and draw the radii OC, OD. In the Δ 's OCT, OAS are the \angle 's T, and S right ones, CO = AO, and the \angle O common $\therefore AS = CT$; and by the same reasoning BV = DM; then by sim. Δ 's AB : BP :: BR : BR, and AB : AP :: AP : AR, but $2 AS = AP$, and $2 BV = BP \therefore AB \cdot BR = 2 BV^2$ and $AB \cdot AR = 2 AS^2$. Now $\overline{AB}^2 \cdot \overline{CT}^2 =$ square of the double area of the ΔACB $2 AO^2 \cdot \overline{AS}^2 = \overline{AC}^3 \cdot 2 AR$; and by the same way of reasoning $\overline{AO}^3 \cdot 2 BR =$ that of the ΔABD ; but $AR = AO - OR$, and $BR = AO - OR$; consequently $\overline{AO}^4 =$ the sum of the squares of the Δ 's ACB, and ADB.



Again, the $\angle CAP = CBP = ABC$, and $DAB = PAD$ because $PC = AC$, and $PD = DB$ by the ques. but the $\angle CAD = \angle CAP + PAD = CBA + BAD = AIC$; consequently $AI = CA$, and the $\angle ACI$ a right one $\therefore CAIF$ is a square, and by the same reasoning $BDIE$ is a square. Again, the rectangle $I H = IE \cdot AI = IE \cdot IE$. If $\sqrt{2}$, and the rectangle $IG = IB \cdot IB = IE \cdot IF \cdot \sqrt{2} \cdot Q. E. D.$

The same answered by Mr. John Fildes, Schoolmaster, Liverpool.

Const. In addition to the figure of the Diary, from the points C and D , let fall the perpendiculars CT and DM (vid. the figure) upon the diameter AB ; and from the center O , draw the radii OC and OD .

Demon. As the arc CPD is $= \frac{1}{2}$ the arc APB of the semicircle, the $\angle COD$ will be a right angle, and the Δ 's COT and DMO will be similar: and since $CO = DO$, the other two sides in each Δ will be respectively equal; that is $CT = OM$, and $TO = DM$.

Next, the area of the $\Delta ACB = AO (\frac{1}{2} \text{ the base } AB) \times CT$, and that of the $\Delta ADB = AO \times TO (DM)$; \therefore the sum of the squares of the areas will be $AO^2 \times CT^2 + AO^2 \times TO^2 = AO^2 \times CT^2 + TO^2 (CO^2 \text{ or } AO^2) = AO^4 \cdot Q. E. D.$ Again, the $\angle CAD$ being $= \frac{1}{2}$ the right angle COD , and the $\angle ACB$ a right angle; the $\angle CAI$ will be the $\angle CIA$, and the side $AC =$ the side CI : consequently $CAIF$ must be a square. Lastly, $AI \times IE (ID) = IF (CI) \cdot IB$; that is the rectangle $AIEH = BIFG \cdot Q. E. D.$

Or thus, by Mr. Brookes, Leeds.

Upon the diameter AB , demit the perpendiculars CT, DM : (see the preceding fig.) Now because the sum of the arcs $AC + BD$ is equal a quadrant, they are complements to each other, and it is well known, that *sine square* + *cosine square* is = radius square, i. e. $CT^2 + DM^2 = \text{radius square}$. Moreover it is evident, that the sum of the areas of the triangles $ACB, ABD = CT \times \frac{1}{2} AB + DM \times \frac{1}{2} AB = CT + DM \times \text{radius}$, and the sum of the squares of these areas is $= CT^2 + DM^2 \times \text{radius}^2 = \text{rad.}^4$, because $CT^2 + DM^2 = \text{rad.}^2$. Again, because CD is a quadrant, and the angles ACB, ADB are right angles, the $\angle CAD = \angle CBD = \angle AIC = \angle BID =$ half a right angle; therefore $AC = CI, DI = DB$, and $AICF, BDIE$ are squares.

Lastly, the rectangles AE and BF are respectively composed of the side of one square, and the diagonal of the other, and consequently are equal one to the other, $Q. E. D.$

Mr.

Mr. Richard Elliott, of Liverpool, gave the following answer.

Let O be the center of the semicircle (vide *Calia Broomwood* fig.) Demit the perpendiculars CT, DM on the diameter AB; then it is plain the $\angle COT = \angle ABP$, $\angle T = \angle P$, and consequently the $\angle TCO = \angle PAB$; therefore the Δ 's TCO, PAB, being equiangular, we have $CO : TO :: AB (2 CO) : PB (2 TO)$. Now the chord of any arc being = to twice the sine of half that arc, the $\perp DM$ (sine of $\frac{1}{2}$ arc PDB) = TO from which it appears that the Δ 's TCO, ODM, are equal in every respect, that is $CO = OD$, $TO = DM$, and $CT = OM$; then the area of $\Delta ACB = AO \times CT$, and $ADB = AO \times DM$; the sum of the squares of the areas = $AO^2 \times CT^2 + TO^2 (DM^2) = AO^4$; for $CT^2 + TO^2$ is evidently = $CO^2 = AO^2$. Again, the $\angle PBC = \angle CBA$, $\angle P = \angle C$; the remaining \angle 's BSP (CSA) and CAB must be equal; hence the $\angle CIA = \angle BAD + \angle CBA = \angle PAD + \angle CAP = \angle CAD$, and $AO = CI$; in the same manner $ID = BD$; therefore ACIF and BDIE are evidently squares. Lastly, as the ΔIBA is equal to $\frac{1}{2}$ IFGB, by adding ΔIDB to both sides, and multiplying by 2, $ADBH = IBFG + IEBD$, or $ADBH - IEBD$ (IAHE) = $IBFG$. Q. E. D.

Mr. Waters, the proposer, Mr. Ashton, Mr. R. Carlisle, and Mr. Saul, also gave ingenious solutions.

NEW QUESTIONS.

I. QUESTION (112) by *Amo Zythum*.

Given the rectangle of the tangents of the acute angles of a right-angled triangle (to the rad. 1.) equal $\frac{12}{3}$, and the continual product of the sides equal 480: what is the area of the triangle?

II. QUESTION (113) by *Juveniencis*.

Given the ratio of the parallel sides AB, ED of a trapezoid, as 5 to 3, and their distance AE equal 100 yards; and if BD, AE be produced to C, the area of the ΔEDC so formed equal 1210 yards: required the area of the trapezoid ABDE.

III. QUESTION (114) by *Mr. Stevenson, Heath, near Chesterfield*.

Given 100 \vee 105 equal the area of a trapezium, whose sides are in arithmetical progression, whose common diff. is 5; to determine the sides.

IV. QUESTION (115) by *James Ashton, of Harrington*.

Given the respective lengths of the two arms of a pair of scales, equal $6\frac{5}{7}$ and $5\frac{1}{7}$, and the true weight of the goods equal 48lb; to find what the same goods will weigh in each end of the scales respectively.

V. QUESTION (116) by *Mr. John Fildes, of Liverpool*.

Given the three sides of a triangle, $AB = 20$, $AC = 18$, and $BC = 15$; now if the angles be bisected by the lines AD, BE, and CF, each

6, and DE, DF, and EF be drawn: it is required to find the area of the triangle DEF.

VI. QUESTION (117) by *Mr. Ashton.*

It is required to divide an arc of a circle of 75° into two parts, such that the sine of the less arc may be eq. to 1-3d of the tang. of the greater.

VII. QUESTION (118) by *Master John Rowbottom, of West Hallam.*

Kind Gents, a new Friend—to your Di'ry doth send,

A question that puzzles my brain;

In hopes the old sages—in your learned pages,

To me will the answer explain.

Its from a young lad—who is puzzled by's dad,

With th' equations hereunto subjoin'd;

And many an hour—I've exerted my pow'r,

But ne'er yet an answer could find.

Besides, thus he said—all guess work evade,

And by a true method obtain,

Both z , x , and y .—But if you'll not try,

They must still in dormant remain.

$$\text{Given } y^{\frac{3}{2}} z^{\frac{1}{2}} + y^{\frac{7}{2}} z + y^2 x^{\frac{3}{2}} + y z^3 + y^{\frac{2}{3}} z^{\frac{7}{2}} + y^{\frac{1}{3}} z^4 = 46431924$$

$$+ y^{\frac{4}{3}} z^{\frac{5}{2}} + 2 y z + 2 y^{\frac{2}{3}} z^{\frac{3}{2}} + y^{\frac{1}{3}} z^2 = 28644 z^{\frac{1}{2}} + y^{\frac{1}{3}} +$$

$$+ 2 y^{\frac{1}{3}} + z^{\frac{1}{2}} + 3 y^{\frac{1}{3}} \&c. \text{ to } x \text{ terms} = 1771856. \text{ Where}$$

represents my age in years, y the days, and z the hours.

VIII. QUESTION (119) by *Envoyssent*

There is an octagonal prismatic cistern, that contains 160 ale gallons; whose internal surface is a minimum; now if it be filled with water, it will exhaust through an aperture in the base in 5 minutes: from the data here given, it is proposed to determine the cistern's internal dimensions, and area of the aperture.

IX. QUESTION (120) by *Mr. Joseph Waters, Graves Lane.*

To determine the least whole number, that being divided by n , leaves but if divided by $n + 1$, leaves b remaining: where n , a , and b are proposed three given integers, of which n is greatest, and b the least.

X. QUESTION (121) by *Mr. Wm. Marsden. Netherhurst.*

the day, as I upon the scale was	The less squar'd once, the greater
musling,	twice, must be, (will see;
and diatonic harmony perusing;	Their product next the greatest you
two intervals appeared straight to	From hence these intervals be pleas'd
view,	to shew, (know.
those sum in half notes made an oc-	Their ratio also should be glad to

XI. QUESTION (122) by *Mr. Fildes.*

the length of a ladder be twenty-	Just eight feet from the moat, the top
five feet,	four feet will fall;
will reach from the edge of a moat	Now from these being known, both
near our street,	the height of the wall,
to the top of a wall on the opposite	And the breadth of the moat, I request
side;	you to tell, (me well.
at the ladder, if you at the lower	By geometry only; and you'll please

XII. QUESTION (123) by Mr. Joseph Saul, of Rochdale.

In any right angled $\triangle ABC$, if the perpendicular be produced to D to that the hypoth. $AD =$ the sum of AC and BC , and if a $\perp BF$ be demitted from B to AD , the segment FD will be $=$ to twice BC : required a demonstration.

XIII. QUESTION (124) by Casia Broomwott.

Being one night in company seated quite snug,
With a chearful companion, a glass, and a jug;
A conical frustum the glass seemed to be,
All th' dimensions we know in the margin you'll see.
A circular table, horizontal and true;
The diameter of which appears to your view*.
I took up the glass (while relating a fable)
And carelessly laid it along on the table;
The position thereof was unluckily such,
That the top and the bottom the edge did just touch||.
It roll'd six times over; then fell to the floor,
Cutting off from the table so much and no more.
Now the glass it being broken, for it I must pay,
And my landlord came into this measure straightway,
For each cubic inch in the glass I should give,
Four-sevenths of a penny which he would receive.
But neither my landlord nor friend could find out,
The value of the glass. But you without doubt,
Will give the content, that the price we may know,
I'd rather it were fictitious than really so.

* Bottom diam. 2 inches; side 4 inches.
* 44.05906 inches.
|| Circum. of the top and bottom of the glass touched the edge of the table.
† 50.147164 inches from the circum. of the table measuring from the top of the glass.

XIV. QUESTION (125) by Jon. Mabbott, of Oldham, Lancashire.

The fluxional expression $\left(\frac{n-1}{abcd, \&c.} \times r x^{n-2} x - x^{n-1} x \right)$ given at page 110, of Simpson's Annuities: required the fluent thence derived.

N. B. This question was proposed in a periodical work published some years since; but a much more elegant investigation of the fluent here required, than any that hath hitherto appeared.

XV. QUESTION (126) by Casia Broomwott.

Required an investigation of the general rule given in my solution to question 6th.

XVI. Prize QUESTION (127) by Mr. John Brookes, Leeds.

ABC is a triangle whose angles at the base are both acute. Now if a right line proceed from D , the middle of the base, making an angle therewith equal to the complement of half the difference of the angles at the base, and perpendiculars BG , CH be demitted thereon from the angular points B and C , and CD joined: I say the triangles DGB , DHC will be equal. Required a demonstration.

25 00 65
All Letters for the use of this Diary are desired to be directed thus: Cotes and Hall, to be left at Mr. Drewry's Printer, in Derby (post paid), to come to hand before the first of May.

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